

Journal

OF THE
**AMERICAN VETERINARY
MEDICAL ASSOCIATION**



This tiny traveler carries a surgically implanted radio transmitter capable of relaying in-flight data to aid development of a human life-support system in space.

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Vol. 137

December 15, 1960

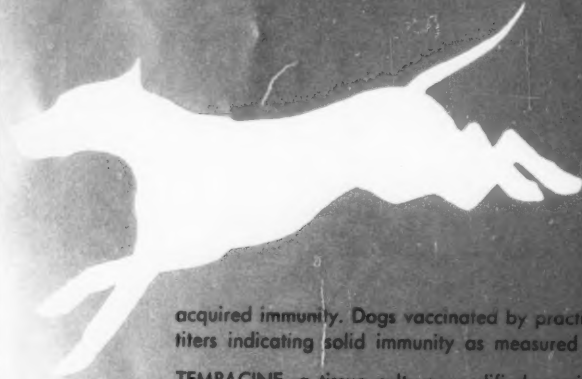
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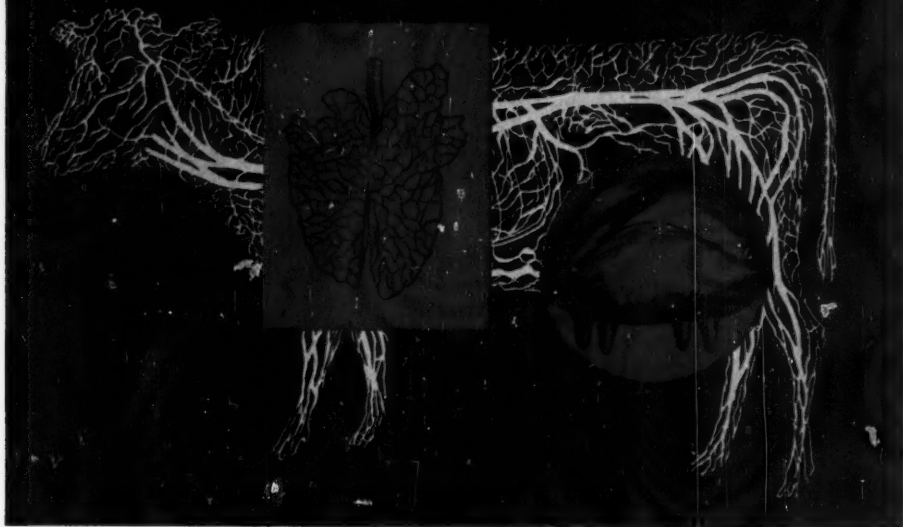
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Journal

OF THE
AMERICAN VETERINARY
MEDICAL ASSOCIATION

Vol. 137

No. 12

Dec. 15, 1960

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Correspondence

Reviewers' Critic Backed—and Attacked!

Nov. 7, 1960

Dear Sir:

The recent request for more critical review of manuscripts, by Dr. D. A. Willigan (Correspondence, *J.A.V.M.A.*, 137, Nov. 1, 1960: adv. p. 4), deserves support. Further evidence of the need for such critical review before publication is the paper, "Surgical Correction of Calcified Lumbar Intervertebral Disk in a Daschshund—A Case Report," by Frank A. Ramsey, D.V.M., which appeared in the same issue, *J.A.V.M.A.*, 137, Nov. 1, 1960: 540-543.

In this paper, a roentgenogram (fig. 1) shows calcification of the intervertebral disc between lumbar vertebrae 6 and 7, which is offered as the cause of the subject's prolonged posterior paralysis. The text does not mention, nor does the reproduction clearly reveal, either a decrease in the intervertebral space or bulging of the calcified material into the spinal canal. In the absence of diagnostic contrast-medium myelograms, these and not mere disc calcification are the radiographic criteria of disc protrusion. Further, since the conus medullaris of the canine spinal cord does not extend beyond the sixth lumbar vertebra, it is unlikely that a disc protrusion at this level would cause such profound signs. It is unfortunate that the roentgenogram does not include the discs in the vicinity of the thoracolumbar junction, where the significant lesion is more apt to occur.

Roentgenograms made four months after surgery (fig. 2) show "almost complete calcification of the intervertebral disc between lumbar vertebrae 6 and 7." The author raises the question of whether the operation or merely time had led to recovery. In my mind, it raises the question of the nature of the operative procedure. The nucleus pulposus is

(Correspondence cont'd — adv. p. 6)



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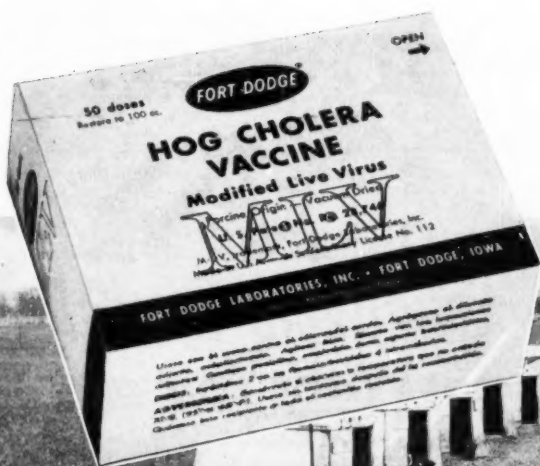
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FORT DODGE



Correspondence—continued from adv. p. 4

not known to regenerate after its removal, which makes one wonder how it could undergo "secondary calcification." From the evidence presented, I fear that in this instance, it was never removed.

As one who favors fenestration and curettage in the treatment of intervertebral disc protrusions, I am distressed by the inaccuracies in this paper. I recognize that the author of a single case report is under no compulsion to review the literature, but I do believe that he should warn the reader when his material is in contradiction to it.

S/GHERRY D. PETTIT, D.V.M.
Dept. of Medicine, Surgery, and Clinics
School of Veterinary Medicine
University of California
Davis, Calif.

Nov. 5, 1960

Dear Sir:

I was rather surprised, in reading the letters in the Nov. 1, 1960, issue of the *J.A.V.M.A.*, at the rather cruel and absolutely unnecessary criticism by

Dr. Donald Willigan of an article by Pilcher and Yatsook.

I realize that the article in question probably was not intended for the ultra-scientific minds, such as Dr. Willigan's, but was probably sent in for practitioners, as they are the ones who encounter such things in practice. I believe that most of the practitioners who read it got the impression that it was one helluva tumor in a dog, and, even if it was a benign tumor, the dog was not happy with it.

Men who have something to tell their fellow practitioners hesitate to send articles in for publication because they do not wish to subject themselves to embarrassment from such sources.

We who are trying to make a living treating animals want and need articles from other men in the same work, giving chemical signs, diagnosis, treatment, and results. Good literary composition is to be desired, but should be the vehicle for transferring knowledge rather than the main idea in writing. More articles should be written by men in the field.

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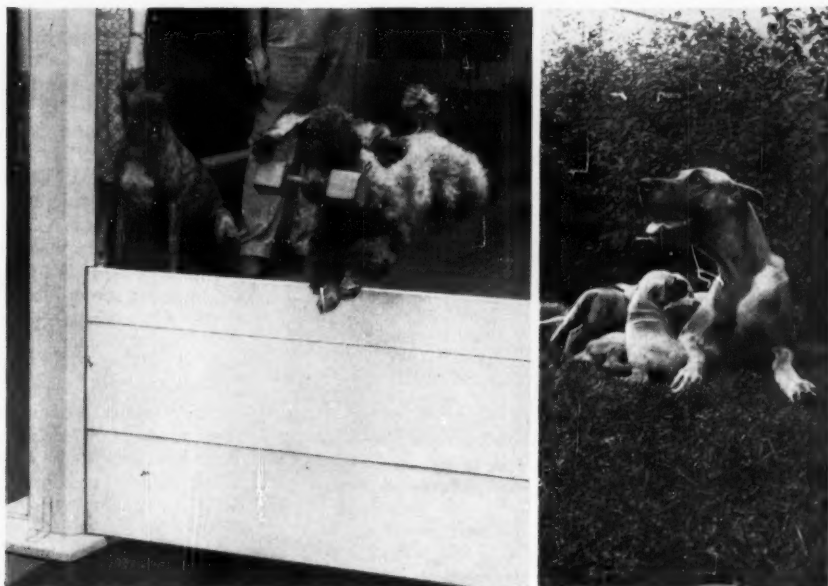
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Prospectus Launched

One of the significant accomplishments at the November Executive Board meeting was the signal to proceed with a prospectus of all veterinary medicine in the United States and Canada and the authorization of funds to finance its first phase. This action brings to fruition work of about three years by the AVMA staff, the House of Delegates, the Executive Board, and the Board of Governors.

The program is divided into two phases:

Phase 1.—The portion authorized by the appropriation is to be the development of the Prospectus blueprint. It will define the aims and objectives of the Prospectus, outline the methods of accomplishment, and designate who shall carry out the work.

Phase 2.—This is to be a detailed examination of the position veterinary medicine now occupies and its appropriate future course. It will be an appraisal of the total problem of relating veterinary medicine to its most useful function now and in the future. Each individual area of veterinary activity will be examined to determine how well it is supplying present needs, to uncover new opportunities, and to anticipate the future.

Phase 1 should last about a year. Its cost cannot be estimated exactly; hence, the Board's authorization of "up to" \$25,000. The money will not be spent all at once but will be used as needed. It is hoped that the cost can be kept below the established ceiling.

Phase 2 will require two years—maybe more. It will cost about a quarter of a million dollars. It is the Board's plan that this portion will be financed outside the AVMA, and there is good reason to believe that such money will be available to us. We cannot expect to successfully approach

sources of large funds, such as foundations or government, for financing the Prospectus until we have in hand a carefully, intelligently developed blueprint. Phase 1 is designed to provide us with this blueprint. We are financing the first phase ourselves because it is felt that by so doing we will considerably strengthen our position for approaching outside sources for the really big money.

The Committee on Prospectus of the Executive Board is composed of Dr. Mark Allam, chairman, Dr. M. G. Fincher, Dr. S. F. Scheidy, and Dr. Don H.

Spangler. They will work closely with the Board of Governors and the Executive Board in developing and executing this program.

When the prospectus is analyzed, the veterinary profession will have taken its first exhaustive inventory of itself. The knowledge we gain should be a foundation on which we can plan our future efforts. It should put us in an excellent position to relate ourselves to our many problems, dangers, and opportunities, such as in public health, vertigration, the exploding suburbia, space medicine, socialization, future practice specialization, and much more. It should help point up the needs for our future, and it should be a compass for our educators.

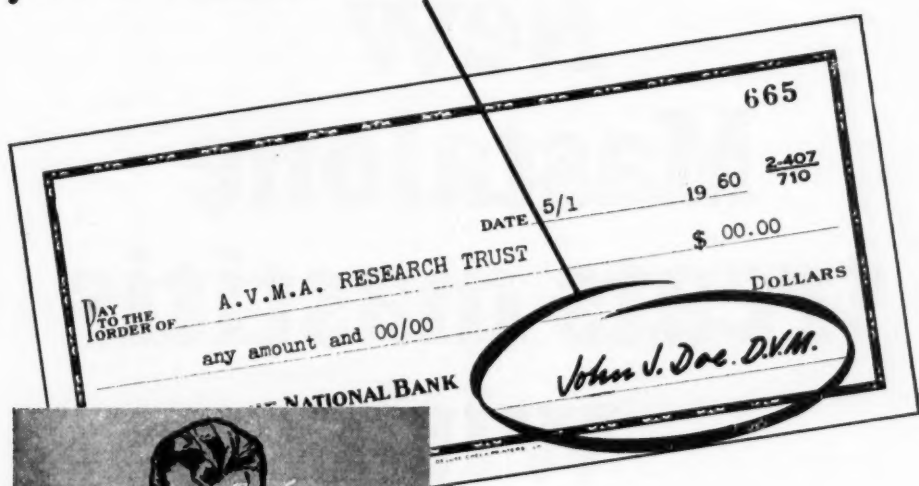
For information pertaining to other actions taken by the Executive Board at its meeting on November 3 and 4, 1960, the reader is referred to the news report on page 737 of this issue.



Dr. Jack O. Knowles, Chairman,
AVMA Executive Board

Jack O. Knowles

your name here



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Senate: J. Caleb Boggs (R. Del.), Jack Miller, (R. Iowa), Edward V. Long (D. Mo.), Lee Metcalf (D. Mont.), Claiborne de Borda Pell (D. R.I.), and Keith Thompson (R. Wyo.).

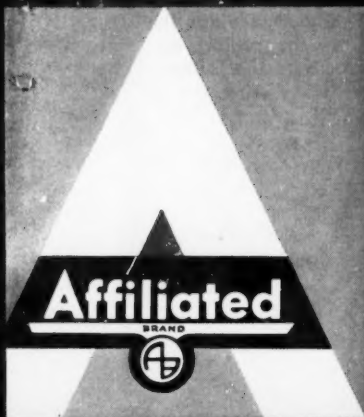
House of Representatives: Alaska—Ralph Rivers (D. Al.); California—Alfonso E. Bell, (R. 16th), James C. Corman (D. 22nd), John H. Rousselot (R. 25th); Colorado—Peter H. Domanick (R. 2nd); Connecticut—Horace Seely-Brown (R. 2nd); Georgia—Elliott Hagan (D. 1st), John W. Davis (D. 7th), Robert Stephens (D. 10th); Idaho—Ralph R. Harding (D. 2nd); Illinois—Edward R. Finnegan (D. 12th), John B. Anderson (R. 16th), Paul Findley (R. 20th); Indiana—J. Edward Roush (D. 5th), Richard Roudebush (R. 6th), Earl Wilson (R. 9th), Ralph Harvey (R. 10th), Donald Bruce (R. 11th); Iowa—James E. Bromwell (R. 2nd); Kansas—Walter L. McVey (R. 3rd), Garner E. Shriver (R. 4th), Robert A. Dole (R. 5th); Maine—Peter A. Garland (R. 1st), Stanley R. Tupper (R. 2nd); Maryland—C. McC Mathias (R. 6th); Massachusetts—F. Bradford Morse (R. 5th); Michigan—James Harvey (R. 8th); Minnesota—Clark MacGregor (R. 3rd); Missouri—Durward G. Hall (R. 7th), Richard H. Ichord (D. 8th); Montana—Arnold Olsen (D. 1st), James F. Battin (R. 2nd); Nebraska—Ralph R. Beerman (R. 3rd), Dave Martin (R. 4th); New Jersey—Charles S. Joelson (D. 8th); New York—Otis G. Pike (D. 1st), Joseph P. Addabbo (D. 5th), Hugh L. Carey (D. 12th), Wm. Fitts Ryan (D. 20th), Carleton J. King (R. 31st); North Carolina—David N. Henderson (D. 3rd), Horace R. Kornegay, (D. 6th); North Dakota—Hjalmer Nygaard (R. Al.); Ohio—Don D. Clancy, (R. 2nd), Wm. H. Harsha (R. 6th), Charles A. Mosher (R. 13th), Tom V. Moorehead (R. 15th), John M. Ashbrook (R. 17th); Oklahoma—Clyde Wheeler, Jr. (R. 6th); Oregon—Edwin R. Durno (R. 4th); Pennsylvania—Wm. W. Scranton (R. 10th), Richard S. Schweiker (R. 13th), J. Irving Whalley (R. 18th), George A. Goodling (R. 19th); Rhode Island—Fernand J. St. Germain (D. 1st); South Dakota—Ben R. Reifel (R. 1st); Utah—M. Blaine Peterson (D. 1st)*; Washington—Mrs. Julia B. Hansen (D. 3rd); Wisconsin—Henry C. Schadeberg (R. 1st), Vernon W. Thomson (R. 3rd); Wyoming—Wm. H. Harrison (R. Al.). Two physicians among newcomers, Drs. Durward G. Hall, Mo., and Edwin Durno, Ore., making total of six M.D.'s in the House.

*Leading, recount not complete.

(Continued on adv. p. 16)



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Washington News—continued

Rule Proposed to Define "Scientific" Research

Internal Revenue Service published notice of proposed rule (*Federal Register*, Nov. 15, 1960) to amend the income tax regulations, to prescribe a definition of the term, "scientific," as used in section 501 (c) (3) of Internal Revenue Code, and to prescribe rules with respect to the taxation under 511 of such code, of income derived from certain research. The basic requirement is that the "scientific research," conducted by organizations receiving or applying for the tax-exempt status must be performed in the public interest.

NIH Gives 524 Research Grants in October

In October, National Institutes of Health approved 524 research grants and 218 fellowships, combined value being \$10,905,335. The research grants went to 69 institutions in 27 states, the District of Columbia, and 12 foreign countries.

AEC Approves Grants for Nuclear Training

Atomic Energy Commission approved \$1,547,538 additional in grants to educational institutions for laboratory equipment for starting or expanding nuclear training in life and physical sciences and engineering. Approximately \$18.5 million has been distributed by A. E. C. to 330 educational institutions during the four years this assistance program has been in operation.

Reservists May Earn Credits by Translating

Army Research and Development Reservists will be able to earn retirement point credits by translating foreign scientific and technical material. The new plan, sponsored by Lt. Gen. Arthur G. Trudeau, R & D Chief, provides that Reservists may request assignment to the project by letter through their unit commander directly to the Office of the Chief of R & D, according to *Army, Navy, Air Force Journal*, Nov. 19, 1960.

New dosage forms available.

VETAMOX® Acetazolamide

This non-mercurial diuretic for the relief of edema and fluid retention now can be had as a soluble powder or sterile solution for parenteral use.

These two new dosage forms (100 mg. tablets for use in dogs and cats have been available for some time) are for use in large animals, especially in edema disease in hogs and udder edema in cows. Reprints of test results may be obtained, either from your Cyanamid representative or from the address below.

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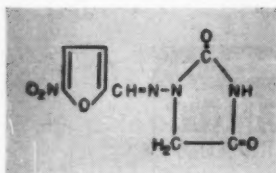
veterinary

FURADANTIN, a clinically important member of the unique nitrofuran family, is an ideal therapeutic agent in small-animal urinary tract infections and canine tracheobronchitis. "The drug [FURADANTIN] possesses a wide antibacterial spectrum and appears to lack the bacterial-resistance-producing potential of penicillin and other antibiotics."¹

FURADANTIN displays unusual effectiveness against the majority of common urinary tract pathogens, including resistant strains of *Pseudomonas* sp., *E. coli*, and staphylococci. Its rapid rate of absorption and excretion following oral administration and specific affinity for the urinary tract—where it reaches high bactericidal concentrations in the urine—help explain why FURADANTIN is the drug of choice in urinary tract disease.

FURADANTIN exhibits marked antimicrobial activity and maintains the therapeutic response even in the presence of blood and pus that may be found in the urine of affected animals. Its exceptional solubility over a wide pH range avoids the likelihood of crystalluria. Superinfections with fungi, anaphylaxis and blood dyscrasias have not been reported in animals.

Thus with FURADANTIN the veterinary practitioner may now achieve a greater number of clinical recoveries in the daily management of small-animal urologic infections and canine tracheobronchitis.



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REFERENCES: 1. Michaelson, S. M., and Covert, M.: J. Am. Vet. M. Ass. 134:334 (Apr.) 1959. 2. Mosier, J. E., and Coles, E. H.: Vet. Med. 53:619 (Dec.) 1958. 3. Bell-off, G. B.: Calif. Vet. 9:27 (Sept.-Oct.) 1956. 4. Coles, E. H., and Mosier, J. E.: Am. J. Vet. Res. 20:1020 (Nov.) 1959. 5. Mosier, J. E.: Vet. Med. 52:445 (Sept.) 1957.

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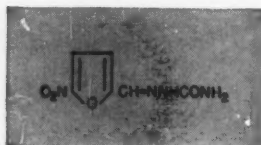
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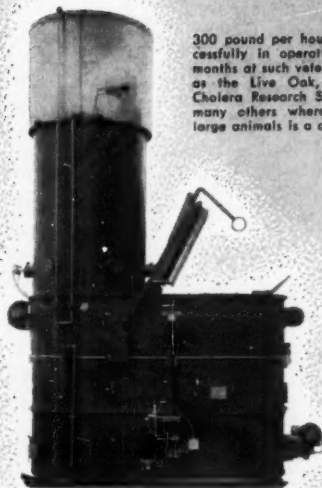
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Instrumentation of Animals for Biosatellite Research

Surgical Implantation of Radio Transmitters for Determining Viability in the Mouse

Harry A. GORMAN, D.V.M., M.S.

BEFORE human beings can expect to conquer space, a reliable life-support system must be developed. Animal data resulting from biosatellite research, extrapolated to man, form the sequence of knowledge that

Since Nov. 3, 1957, when the Russians launched Sputnik II carrying the dog "Laika," several biosatellites have been placed in orbit. One of the current U.S. biosatellite programs for probing space in-

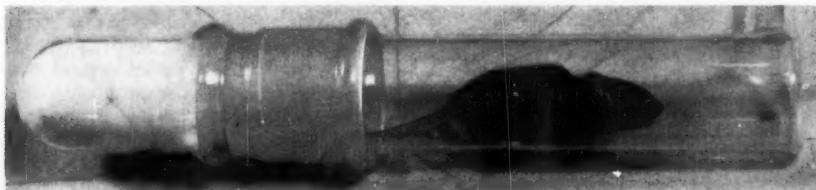


Fig. 1—Before the transmitter is implanted, the mouse is anesthetized in a glass chamber.

will soon assure human pioneers of space travel a safe and tolerable journey.

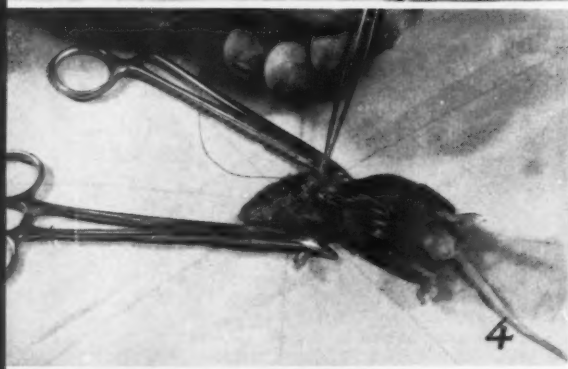
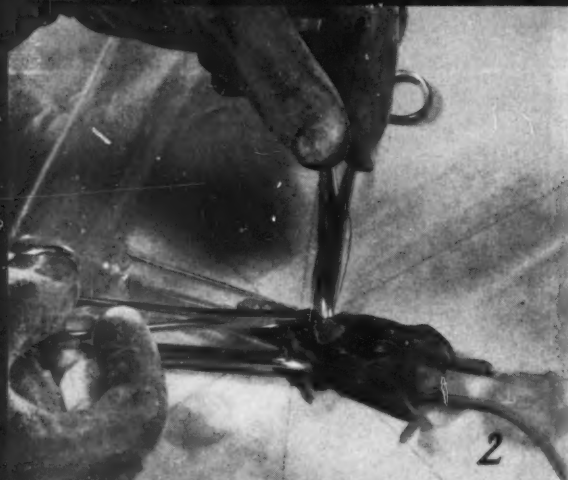
Colonel Gorman is chief, Veterinary Services, School of Aviation Medicine, USAF Aerospace Medical Center, Brooks Air Force Base, Texas.

The opinions expressed herein are those of the author and are not to be construed as representing official USAF policy.

The author thanks Mr. Robert M. Adams and Mr. James R. Dickey, electronic engineers, School of Aviation Medicine, Brooks Air Force Base, Texas, for their development of the radio transmitter. Without their contribution, the work reported here would not have been possible.

cludes the launching, orbiting, recalling, and recovering of animal life-support packages. Some of these biopacks will contain mice; others, small primates.

Conventional test instruments used for monitoring biophysical measurements in the laboratory are too heavy and bulky to come within the acceptable missile payload limitations. Special miniaturized monitoring devices are necessary to transmit biomedical data from the life supporting cap-



sule to receiving ground stations. Extreme g-forces, weightlessness, centrifugal influences, abrupt acceleration and deceleration, intense heat and cold, and mechanical fatigue are but some of the stresses to which viability-monitoring devices are subjected. Tissue irritation, infection, radiation, adaptability to restraint, and multiple post-operative sequelae are factors that may jeopardize an animal's well-being when monitoring devices are implanted or attached. It, therefore, is obvious that obtaining useful, reliable, biophysical measurements under in-flight conditions poses a multitude of problems.

For the first U.S. orbiting biosatellite, four C-57 black mice were selected as the specimens. Because of the size of the subjects, all monitoring instruments had to be reduced to small scale.

A tiny radio transmitter, designed with the capability of transmitting physiologic data, proved to be reliable for determining the in-flight viability of the mice.

The miniature transmitter, receiving its power source from a mercury 400RM dry cell battery, was designed as a small saddle to be affixed to the back of each mouse. Cardiac potentials are sensed through electrodes implanted in the sternum, respiratory movements of the mouse are sensed through small coils mounted over each flank of the animal, and general body movements are sensed through the sutures affixing the saddle; thus, electrocardiogram, respiration, and muscular responses are transmitted by the miniature radio.

Transmission of each of the electrophysiological parameters is on a preselected frequency. Detectors located outside of the cage of each animal are tuned to the specific radio transmitter frequency for each mouse, and the viability signals are amplified and retransmitted from the orbiting biosatellite on assigned telemetry channels

Fig. 2—With the mouse in a ventrodorsal position, a subcutaneous incision is made over the sternum about midway between the manubrium sternum and the xiphoid cartilage.

Fig. 3—The protected electrode wire is threaded through cannula and both the electrode wire and cannula are withdrawn from the neck.

Fig. 4—The sternal incision is closed by interrupted nonmetallic sutures.

Fig. 5—A small piece of polyethylene tubing, placed over the suture where it contacts the skin, will prevent suture cutting of the skin.

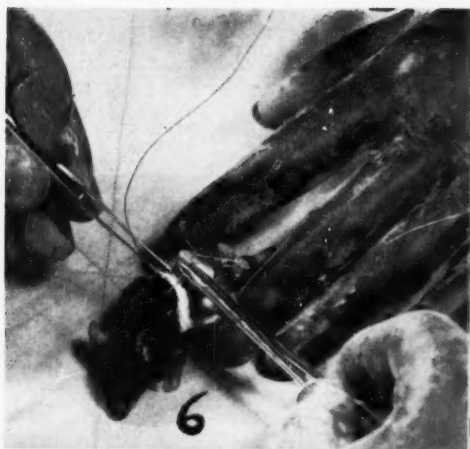


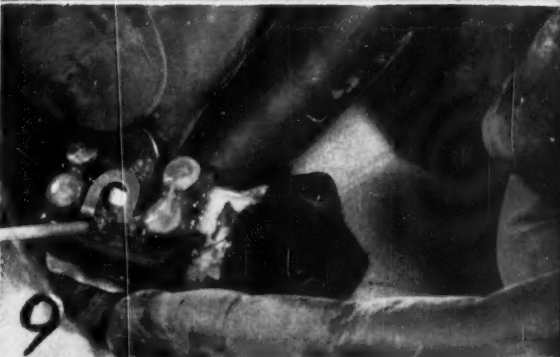
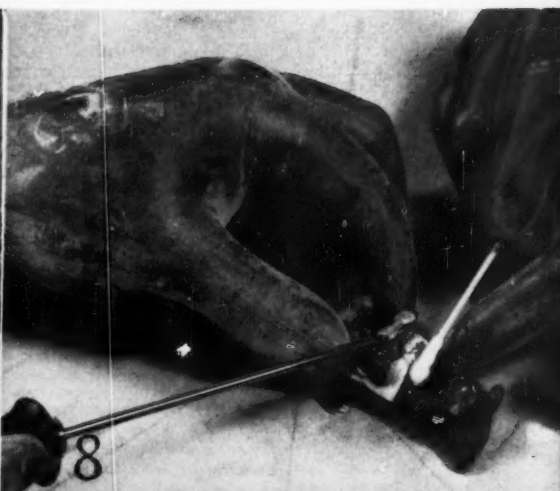
Fig. 6—Several windings of the suture wire over the terminal will provide a better contact when the wires are soldered.

Fig. 7—The electrode lead wire is bared to attach to the input antennae of the transmitter.

Fig. 8—A drop or two of phosphoric acid, placed on the ground terminal and input antennas, simplifies the soldering of the stainless steel electrode and ground wires to the transmitter.

Fig. 9—A mercury battery, in battery clip, activates the transmitter.

Fig. 10—Transmission can be checked by tuning in a transistor radio to the transmitter's preassigned frequency.



to the many tracking stations on earth. Thus, the animal's physiologic responses can be studied throughout a space flight. These data, properly extrapolated, contribute to the complex knowledge pattern

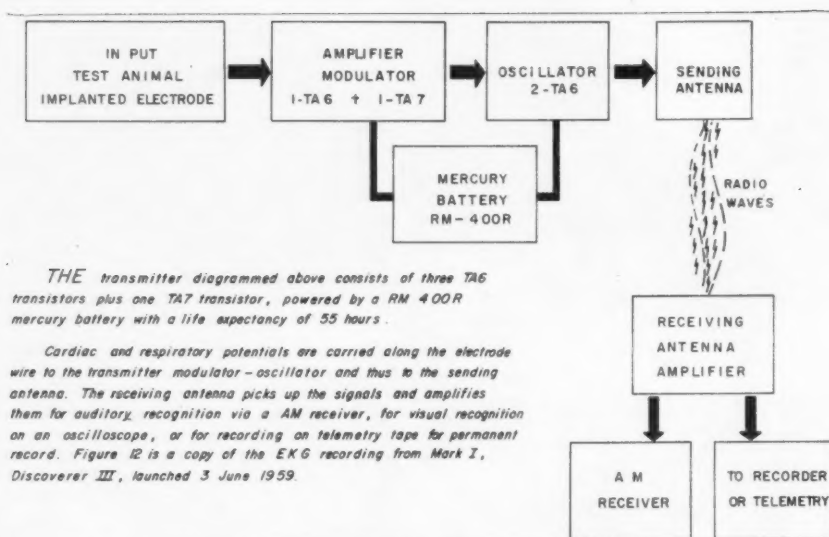


Fig. 11—Schematic drawing of the radio transmitter.

required before man himself can safely venture into space.

Surgical Implantation

Surgical implantation of the mouse transmitters is accomplished several days before the scheduled launching. The mouse is anesthetized in a glass chamber by administering ether to the desired surgical

plane of anesthesia (fig. 1). Preoperative preparation includes scrubbing of the sternal area, the back, sides, and neck with phisohex* followed by 70 per cent alcohol. The mouse's hair is not removed because it will serve as a direct indicator of exposure to cosmic radiation. Although an aseptic surgical technique is impossible, the use of sterile instruments, sutures, and electrodes with a clean technique, will minimize postoperative infections and increase the longevity of the subject.

With the mouse in a ventrodorsal position, a subcutaneous incision is made over the sternum about midway between the manubrium sternum and the xiphoid cartilage (fig. 2). The skin is slightly undermined to better expose the left posterior pectoral muscle. A small $\frac{3}{8}$ -circle taper suture needle with 34-gauge stainless steel wire attached is passed under the left posterior pectoral muscle and the wire tied in a square knot to form a loose contact loop, encasing the muscle. Care must be taken to pass the wire between the pectoral muscles and the rib cage so that the thoracic cavity is not invaded, with subsequent pneumothorax and death of the mouse.

After the electrode wire is tied in a loop

DISCOVERER III TELEMETRY MOUSE ELECTROCARDIOGRAM DURING WEIGHTLESSNESS

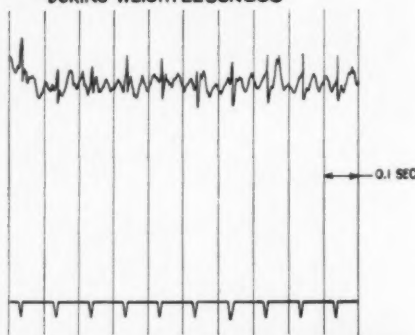


Fig. 12—Copy of electrocardiogram from the telemetry tape of Discoverer III launched June 3, 1959.

*Winthrop Laboratories, New York, N.Y.

around the posterior pectoral muscle, one end of the suture wire is cut at the knot, while the other end is left about 6 inches long. A 50-Fr polyethylene tubing is placed over the long end of the suture wire to insulate it. If the electrode wire is slightly longer than the protective tubing, the exposed end can be folded back over the end of the tubing to keep the tubing down snugly on the knot at the pectoral muscle.

At this point, an 18-gauge, 4-inch hypodermic needle, with hub removed, is passed as a cannula from the sternal incision, subcutaneously, to the dorsum of the neck. The protected electrode wire is threaded through the cannula and both the electrode wire and cannula are withdrawn from the neck (fig. 3).

Next, the sternal incision is closed by interrupted nonmetallic sutures (fig. 4). Then the mouse is turned over and a simple knot is placed in the electrode wire so that the knot will be at the skin surface of the neck without placing any tension upon the underlying electrode loop over the left pectoral muscle. An interrupted skin suture, passed through the simple knot of the electrode wire, will anchor the electrode wire to the dorsum of the neck.

The saddle radio transmitter is sutured to the back of the mouse by horizontal mattress type sutures (nonmetallic). A small piece of polyethylene tubing, placed over the suture where it contacts the skin, will prevent suture cutting of the skin (fig. 5).

Two sutures, one over the flank area and one over the heart girth area, are placed on each side of the mouse to anchor the transmitter.

After the transmitter is anchored to the mouse, a small $\frac{3}{8}$ -circle cutting needle with a 34-gauge stainless steel suture is passed from the front of the saddle into the neck muscles of the mouse and back, to be tied over the ground terminal wire of the transmitter. Several windings of the suture wire over the terminal will provide a better con-

tact when the wires are soldered together (fig. 6).

Next, the electrode lead wire is bared to attach to the input antennas of the transmitter (fig. 7). Several wraps of the electrode wire, followed by soldering, gives good contact for the incoming impulses.

A drop or two of phosphoric acid, placed on the ground terminal and the input antennae, will simplify the soldering of the stainless steel electrode and ground wires to the transmitter (fig. 8).

When the transmitter has been surgically implanted, a 400RM mercury battery, placed in the battery clip, activates the transmitter. Transmission can be checked by tuning in a transistor radio to the transmitter's preassigned frequency (fig. 9, 10).

Postoperative care of the mouse includes the administration of oxygen to hasten the recovery from anesthesia. Instrumented mice must be housed separately in clean cages. Sawdust or other bedding material may foul the transmitter. Mice housed together will chew on each other's transmitters.

Comment

Mice with radio transmitters implanted have transmitted electrocardiograms, respiration, and muscular activity signals for 27 days (figure 11 is a schematic drawing of the radio transmitter; figure 12 is a copy of the EKG signal taken from the telemetry tape of Discoverer III launched June 3, 1959).

The prospect of applying similar monitoring devices to parameters other than of EKG, respiration, and muscular activity is most encouraging. Electrocardiography, electroencephalography, electromyography, vectorcardiography, and many other studies are easily within the scope of this type of electronic transmission.

Current Cat-Scratch Disease Data

Over 500 cases of cat-scratch disease in man have been reported in the English literature since 1951. Of 463 cases described, 223 involved the upper extremities, 154 the head and neck, and 86 the lower extremities. Bilateral inguinal lymphangitis was present in 3 cases.—*New England J. of Med.*, 263, (Oct. 27, 1960): 851-852.

Dihydrostreptomycin and Chlortetracycline

into Milk of Cows Following Parenteral Administration

H. BLOBEL, D.V.M., PH.D.
C. W. BURCH, D.V.M.

CONTAMINATION of market milk with antibiotics has attracted considerable attention as evidenced by 4 nation-wide surveys conducted by the Food and Drug Administration.^{3,7,8}

Since antibiotics are essential to modern veterinary practice, a need has developed for precise information regarding the time required for elimination of commonly used antibiotics from the bovine udder.

Materials and Methods

Normal cows whose daily milk production ranged from 18 to 70 lb. were used for these studies. Dihydrostreptomycin sulfate crystalline was injected intramuscularly, and chlortetracycline crystalline* with sodium glycinate was administered intravenously. Some cows were used repeatedly in separate trials after residues of the previously injected antibiotic had been completely dissipated. At least 4 cows served as controls in each experiment.

Bucket milk samples were collected during milkings which started at 5 a.m. and 4 p.m. Blood samples were taken at approximately every 12 hours.

Fresh milk samples and blood serums were assayed for the respective antibiotic, employing the overnight cylinder-plate method as recommended by the Food and Drug Administration.⁶ Rectangular Pyrex trays (19.0 by 30.5-cm.) covered with aluminum foil were used instead of Petri dishes.¹ *Bacillus subtilis* (ATCC 6633) was used in dihydrostreptomycin determinations, and *Bacillus cereus* var. *mycoides* (PCI 213) for chlortetracycline assays. Threshold sensitivities of the respective cylinder-

plate procedures were approximately 0.045 μ g. of dihydrostreptomycin or 0.02 μ g. of chlortetracycline/ml. of milk or blood serum.

Results

Measurable amounts of dihydrostreptomycin were found in the milk of 11 of 26 cows given 0.5 Gm./100 lb. of body weight, intramuscularly. Concentrations of dihydrostreptomycin per milliliter of milk ranged from 0.05 to 0.125 μ g. 12 hours after injection and from 0.05 to 0.13 μ g. 24 hours later. Traces of dihydrostreptomycin (approximately 0.045 μ g./ml.) were detected in the milk of 8 of these cows 36 hours after intramuscular injection. The milk samples of all 26 cows were free of detectable amounts of the antibiotic 48 hours after injection.

When 1 Gm. of dihydrostreptomycin/100 or 50 lb. of body weight was administered intramuscularly to cows in groups of 12, dihydrostreptomycin was demonstrable in the milk samples up to 36 hours after administration (fig. 1 a, b).

Chlortetracycline was found in the milk of all 24 cows given 2 mg./lb. of body weight, intravenously. Traces of chlortetracycline persisted up to 48 hours following administration (fig. 2 b). Concentrations of chlortetracycline in the blood serums of the 24 cows ranged from 0.26 to 0.55 μ g./ml. 12 hours after administration and did not exceed 0.09 μ g./ml. 24 hours afterward. When tested at 36 hours, there were no inhibitory substances in blood serums.

As expected, intravenous administration of 4 mg. of chlortetracycline/lb. of body weight to 12 cows resulted in considerably higher amounts of the drug in milk secre-

From the Department of Veterinary Science, College of Agriculture, University of Wisconsin, Madison.

Published with the approval of the director of the Wisconsin Agricultural Experiment Station as paper NS307.

The authors thank Professor L. H. Schultz, Department of Dairy Husbandry, University of Wisconsin, Madison, for his cooperation, and Miss A. Deneke for her technical assistance.

*Aureomycin, American Cyanamid Co., New York, N.Y.

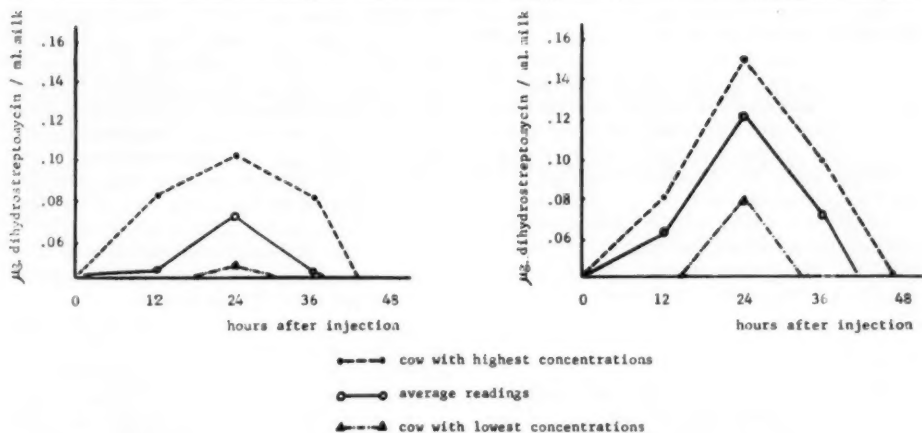


Fig. 1—Concentrations of dihydrostreptomycin in milk secretions of cows following intramuscular injection.

tions (fig. 2 a) and blood serums than those observed in the previous trial (fig. 2 b). At the dosage level of 4 mg./lb. of body weight, concentrations of chlortetracycline in blood serums ranged from 0.40 to 0.85

$\mu\text{g./ml.}$ 12 hours after administration and from 0.06 to 0.28 $\mu\text{g./ml.}$ 24 hours afterward. No inhibitory substances were detectable in the blood serums 36 hours after intravenous administration.

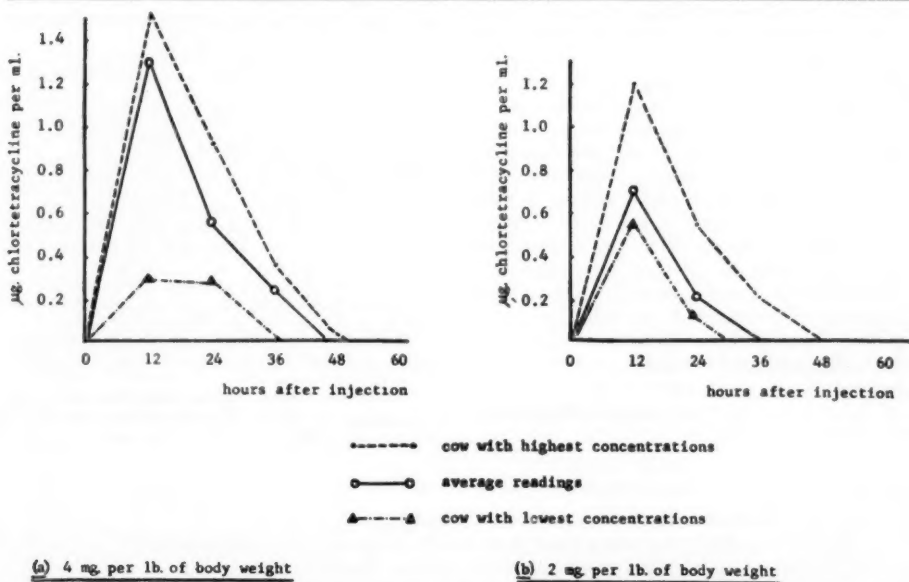


Fig. 2—Concentrations of chlortetracycline in milk secretions of cows following intravenous injection.

The administration of chlortetracycline produced severe anorexia in 2 of 24 cows at the dosage level of 2 mg./lb. of body weight and in 1 of 12 cows given 4 mg./lb. of body weight. The loss of appetite persisted for 2 to 4 days and was accompanied by a drop in the milk production of the 3 affected cows to approximately one third of the normal amount.

Inhibitors could not be found in milk secretions or blood serums of the experimental cows before every trial or in those of the control cows throughout these studies.

Discussion

Milk contaminated with dihydrostreptomycin or chlortetracycline has not yet been proved to cause allergic reactions when ingested by human beings, although such a possibility should be kept in mind. The primary importance of these antibiotics in milk is their capacity to inhibit lactic starters. In this manner, they could cause losses to industries processing dairy products.

The data presented in this report differ from those of others,² who reported that, following intravenous injection of 5 mg. of chlortetracycline/lb. of body weight in 3 normal cows, the antibiotic was eliminated from the milk within 24 hours. When the same cows, in a separate trial, were given 0.5 Gm. of streptomycin/100 lb. of body weight intramuscularly, milk levels of chlortetracycline reached a high of 2.56 µg./ml. With regard to chlortetracycline, our findings are in relative accordance with the results obtained after giving 2 cows injections of 3 mg./lb. of body weight.⁵

Concentrations of chlortetracycline have been reported⁴ in blood serums and milk secretions of 4 cows, acutely affected with brucellosis, as a result of repeated intravenous inoculations. Each cow was given an initial dose of 5.0 mg./lb. of body weight followed by 2 daily doses of either 5.0 mg. or 2.5 mg./lb. of body weight for at least 6 consecutive days.

Summary

Measurable concentrations of dihydrostreptomycin were detected in the milk secretions of 11 of 26 cows given 0.5 Gm. of dihydrostreptomycin sulfate crystalline per 100 lb. of body weight, intramuscularly. When 1 Gm. of dihydrostreptomycin per 100 or 50 lb. of body weight was given intramuscularly to 12 cows, the drug was demonstrable in the milk of all 24 cows. At any of the 3 dose levels, dihydrostreptomycin was eliminated from the udder within 48 hours after it was given.

The intravenous administration of 2 mg. of chlortetracycline crystalline per pound of body weight to 24 cows and 4 mg. of chlortetracycline per pound of body weight to 12 cows resulted in the excretion of detectable amounts of chlortetracycline through the milk of all. The chlortetracycline levels persisted up to 48 hours after the intravenous administration.

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"Usual" Dose vs. "Average" Dose

No drug has a fixed dose which is applicable to every patient and under every circumstance. "Usual dose," which is the term used by the "United States Pharmacopeia," is probably a better term than "average" or "mean" dose.—*Am. Heart J.*, 60, (Sept., 1960): 327.

Blood Serums and Milk Secretions

of Cows Following Intravenous or Intramammary Treatment

H. BLOBEL, D.V.M., PH.D.
C. W. BURCH, D.V.M.

ANTIBIOTICS are widely used in treatment of various bacterial infections in dairy cattle, including mastitis. In this connection, a thorough knowledge of antibiotic levels in blood and milk is essential to obtain optimum therapeutic effects and to avoid contamination of dairy products for human consumption. The literature on this subject has been reviewed recently.⁵

These studies have been designed to obtain further information on blood and milk levels of oxytetracycline following intravenous or intramammary administration.

Materials and Methods

Normal cows, whose daily milk production ranged from 16 to 65 lb., were used for these studies. Crystalline oxytetracycline hydrochloride* was administered intravenously. Oxytetracycline in a liquid solution** was infused into 1, 2, or 3 corresponding mammary quarters. Some cows were used repeatedly in separate trials after residues of the previously administered oxytetracycline preparation had completely dissipated. At least 4 cows served as controls in each experiment.

Bucket samples (after intravenous injections) or quarter samples of foremilk (following intramammary infusions) were collected during milkings which started at 5 a.m. and 4 p.m. Blood samples were collected at approximately 12-hour intervals. In addition, blood samples were collected from all cows (in the intravenous trials) 2 hours after treatment.

Fresh milk samples and blood serums were assayed for oxytetracycline, employing the overnight

cylinder-plate method as recommended by the Food and Drug Administration.³ Rectangular Pyrex trays (19.0 by 30.5 cm.) covered with aluminum foil were used instead of Petri dishes.² The test organism was *Bacillus cereus* var. *mycoides* (ATCC 11778). The threshold sensitivity of the cylinder-plate method was approximately 0.05 μ g. of oxytetracycline per milliliter.

Results

Following intravenous treatment of 20 cows with 2 mg. and 16 cows with 4 mg. of oxytetracycline per pound of body weight, diffusion of the antibiotic from blood to milk occurred in all cows. Concentrations of oxytetracycline per milliliter of milk, 12 hours after treatment, ranged from 0.05 μ g. to 0.5 μ g. in the former case and from 0.2 μ g. to 0.8 μ g. at the higher dosage. Twenty-four hours after treatment, all milk samples were free of detectable amounts of the antibiotic. The respective blood serum titers were recorded (fig. 1).

Intramammary infusion of 1, 2, or 3 quarters with 426 mg. of oxytetracycline (1 tube) per quarter resulted in measurable oxytetracycline levels in milk from those quarters up to 60 hours, but not at 72 hours after treatment (table 1). Transfer of the antibiotic from treated to untreated quarters occurred. Of 14 cows used for each trial, oxytetracycline was excreted at detectable concentrations through untreated quarters in 1 cow after infusion of the right front quarter, in 2 cows following infusion of the right front and left rear quarters, and in 3 cows subsequent to infusion of the right front, right rear, and left rear quarters. Oxytetracycline levels in milk samples from the untreated quarters of infused cows did not exceed 0.08 μ g.

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The cooperation of Dr. L. H. Schultz, Department of Dairy Husbandry, is appreciated. The authors thank Miss A. Denecke for her technical assistance.

*Terramycin (intravenous), Chas. Pfizer & Co. Inc., New York N.Y.

**Terramycin (animal formula for the treatment of mastitis, No. 6971, 426 mg. of the antibiotic per 14.2 Gm. tube in a water-soluble base), Chas. Pfizer & Co. Inc., New York, N.Y.

per milliliter and were consistently lower than those of the corresponding blood serums. Oxytetracycline was present in blood serums and milk of untreated quarters up to 24 hours after treatment. When, under similar experimental conditions, 852 mg. of oxytetracycline (2 tubes) per quarter were infused, the antibiotic persisted in the milk of treated quarters up to 72 hours. As in the foregoing experiments, 14 cows were used for each trial. Oxytetracycline was demonstrable in the milk of untreated quarters in 1 cow after infusion of the right front quarter, in 3 cows following infusion of the right front and left rear quarters, and in 3 cows subsequent to the infusion of the right front, right rear, and left rear quarters. The respective oxytetracycline levels varied between 0.05 and 0.10 μ g. per milliliter of milk. Corresponding oxytetracycline levels in blood serum again were higher than in milk. The antibiotic was eliminated from blood serums and untreated quarters within 24 hours following intramammary infusion.

Considerable variations in oxytetracycline concentrations in milk samples from locally treated quarters were observed. These differences were most pronounced in samples taken during the first milking after intramammary infusion

(table 2). Amounts of the antibiotic in the foremilk were higher than those in the bucket milk.

Following intramammary infusion, some correlation between oxytetracycline levels and yield of milk was observed; generally, oxytetracycline persisted in the milk of low producers at higher concentrations for longer periods than in the milk of high producers.

No inhibitors could be found in the milk secretions and blood serums of the experimental cattle before every trial and in those of the control cows throughout these studies.

Discussion

Because of individual variations, a number of cows have been used in each of these experiments. Factors which influence concentration and persistence of antibiotics in milk under various conditions of treatment include milk yield^{2-4,6} and stage of lactation.⁷ Then, following intramammary infusion, antibiotic concentrations are generally higher in foremilk than in midmilk, strippings, or bucket samples.

The data presented in this report, regarding diffusion of oxytetracycline into milk of intravenously treated cows, are in

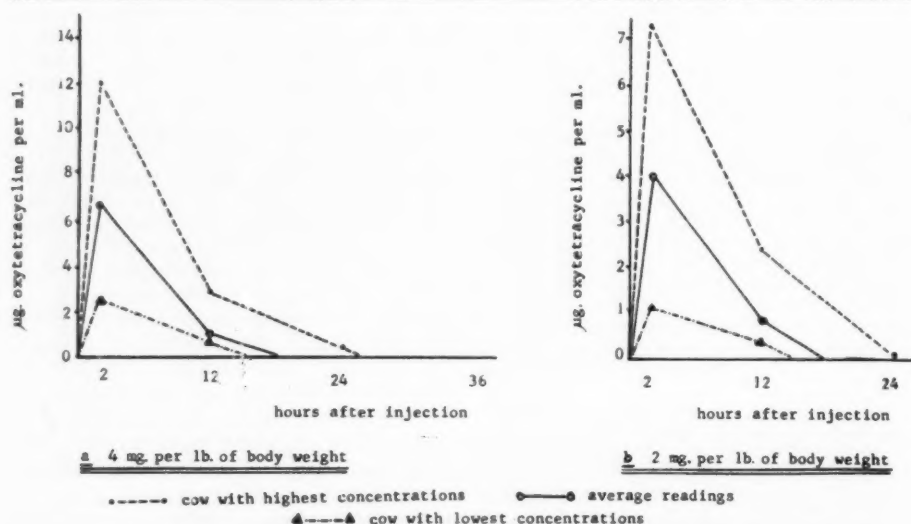


Fig. 1—Concentrations of oxytetracycline in blood serums of cows following intravenous administration of oxytetracycline at 2 and 4 mg./lb. of body weight.

TABLE 1—Concentrations of Oxytetracycline in Milk Secretions and Blood Serums of Cows Following Intramammary Infusion of 1, 2, or 3 Quarters

QUARTER SAMPLES	hours after infusion													
	12	24	36	48	60	72	12	24	36	48	60	72	84	
RF *	max.	1600**	52.0	7.20	4.30	0.60	0	2400	64.0	9.20	4.80	0.08	0.05	0
	ave.	887	36.5	2.68	1.16	0.21	0	1363	40.1	4.21	1.87	0.20	0	0
	min.	400	20.0	1.40	T	0	0	800	25.0	2.90	0.04	0.08	0	0
RR	max.	0.05	0	0	0	0	0	0.05	0	0	0	0	0	0
LR	max.	T	0	0	0	0	0	T	0	0	0	0	0	0
LF	max.	0.05	0	0	0	0	0	T	0	0	0	0	0	0
BLOOD	max.	0.05	0	0	0	0	0	0.07	T	0	0	0	0	0
RF*	max.	1500	70.0	8.00	4.90	1.50	0	2600	82.0	14.80	6.40	0.60	0.08	0
	ave.	1078	42.5	3.49	1.87	0.33	0	1387	45.8	5.80	2.41	0.19	0	0
	min.	600	24.0	1.00	0.05	0	0	620	24.0	2.60	0.08	0.07	0	0
RR	max.	0.07	0.05	0	0	0	0	0.06	0	0	0	0	0	0
LF*	max.	1600	68.0	7.2	5.00	1.50	0	2500	76.0	13.90	6.6	0.40	0.06	0
	ave.	1127	42.9	3.46	1.85	0.31	0	1301	42.1	5.57	2.40	0.18	0	0
	min.	740	22.0	1.20	0.07	0	0	620	25.0	3.00	0.90	T	0	0
LF	max.	0.05	T	0	0	0	0	0.07	0	0	0	0	0	0
BLOOD	max.	0.09	0.05	0	0	0	0	0.08	T	0	0	0	0	0
RF*	max.	1700	68.0	10.0	5.4	1.50	0	2500	79.0	15.20	6.20	0.68	0.07	0
	ave.	1140	38.6	5.6	1.03	0.22	0	1420	49.0	6.97	2.75	0.33	0	0
	min.	600	28.0	1.0	0.05	0	0	620	28.0	2.90	0.70	0.09	0	0
RR*	max.	1600	72.0	11.0	4.8	1.40	0	2400	80.0	15.00	6.50	0.70	0.07	0
LR*	ave.	1328	42.1	5.1	0.85	0.21	0	1406	49.6	6.14	3.02	0.31	0	0
	min.	500	28.0	1.2	0.08	0	0	670	28.0	3.00	0.40	0.07	0	0
	max.	1700	69.0	11.0	4.7	1.30	0	2400	75.0	14.80	6.00	0.07	0.09	0
LF	ave.	1100	41.4	5.1	0.84	0.20	0	1343	46.8	6.53	3.12	0.30	0	0
	min.	500	27.0	1.0	0.05	0	0	650	26.0	2.70	0.60	0.07	0	0
	max.	0.08	0.05	0	0	0	0	0.10	T	0	0	0	0	0
BLOOD	max.	0.10	0.07	0	0	0	0	0.12	T	0	0	0	0	0

* infused; T=traces; max.=maximum, ave.=average, min.=minimum concentrations.

** concentrations of oxytetracycline in $\mu\text{g. per ml. of milk}$

dose: 426 mg. of oxytetracycline per quarter

dose: 852 mg. of oxytetracycline per quarter

relative agreement with those obtained by other workers after intravenous administration of 5 mg./lb. of body weight into 5 cows and 2 Gm. per cow into 3 cows ranging in body weight from 915 to 1,660 lb.⁹ After intravenous administration of 1 Gm. of oxytetracycline to 1 cow, no inhibitors could be demonstrated, using a pad-plate method with a sensitivity threshold of 1.25 $\mu\text{g.}$ of the antibiotic per milliliter.²

Transfer of penicillin from treated to untreated quarters has been reported.⁴ In the case of oxytetracycline, such a transfer has been observed by one group of investigators⁸ but could not be detected by another author.² Our findings indicate that oxytetracycline is transferred to untreated quarters in some cows. One of the considerations which may explain this discrepancy is the difference in the sensitivity of

TABLE 2—Average Concentrations of Oxytetracycline in Quarter Milk Samples Taken at Various Times Following Intramammary Infusion of the Right Front Quarters (Dose—426 mg./Quarter)

hours after treatment	$\mu\text{g. of oxytetracycline per ml. of milk}$						bucket milk
	foremilk	1 min.	2 min.	3 min.	4 min.	strippings	
12	887	652	650	653	654	662	694
24	30.5	20.4	21.8	19.8	20.8	21.8	24.2
36	2.68	2.59	2.62	2.57	2.54	2.54	2.59
48	1.87	1.78	1.86	1.77	1.85	1.86	1.85
60	0.20	0.16	0.18	0.20	0.18	0.17	0.19

the various assay procedures employed in the afore-mentioned studies.

Summary

Oxytetracycline was demonstrated in the milk of all cows 12 hours after intravenous administration of 2 or 4 mg. of the antibiotic per pound of body weight. The drug was eliminated from the udder 24 hours following treatment. Oxytetracycline persisted in the milk secretions of locally treated quarters up to 60 hours after infusion of 426 mg. of the antibiotic per quarter and up to 72 hours following injection of 852 mg. of the drug per quarter. At both dosage levels, transfer of measurable amounts of oxytetracycline to untreated quarters occurred in some cases. Concentrations of the antibiotic in milk of untreated quarters were proportional to the total dose of infusion.

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Brucellosis Allergy in Cattle

Immunity and allergy develop during the course of brucellosis infection in cattle. Immunity is associated with the presence of live pathogens, while allergy seems to be associated with dead, apathogenic organisms.

Clinical signs of allergy in cattle with brucellosis are tendinitis, tendinosynovitis, arthritis, and bursitis. Inflammatory edema, necrosis, and change in vascular permeability, which are characteristics of the Arthus phenomenon, are probably due to allergy, too.—*Monatsh. f. Vet.-med. (German)*, 15, (Sept. 15, 1960): 672-675.

Hypocalcemia in Cattle

Clinical Observations and Certain Electrolyte Serum Blood Values of Dairy Cattle

L. S. NILSSON, V.M.D.

HYPOCALCEMIA and its significance in the dairy cow was the subject of a conference presented under the auspices of the New York Academy of Science in 1956.^{7,17,19,33,34,39} A review of these and other references in the literature published during the past 3 decades (1928-1958)¹⁻⁴⁰ indicates that a great deal of research has been conducted relating to the pathology of parturient paresis in the dairy cow. However, clinical management of the problem remains unchanged, and therapy is usually applied only after paresis is evident.

Preventive measures instituted several days prior to the anticipated day of parturition and directed toward altering the calcium balance in the cow have not been entirely satisfactory.^{2,3,8,31} Virtually nothing is reported in the literature on "early therapy," that is therapy prior to paresis and during the early stages of the associated state of hypocalcemia. The modality of such an approach depends on keen and close observation of cows at or near parturition.

From my clinical observations during 4 years (1955-1959) as resident veterinarian of one of the world's largest registered herds (1,500 Guernseys), I have concluded that:

- 1) Hypocalcemia exists in the parturient dairy cow prior to paresis and is evidenced by clinical signs prior to paresis.
- 2) Hypocalcemia may exist at any time in the high-producing dairy cow during the lactation period and even in the non-lactating cow.

In this study, blood serum electrolyte levels were determined in cows suspected

of being hypocalcemic in each of the following categories:

- 1) Dairy cows with parturient paresis (table 1).
- 2) Dairy cows paretic late in lactation (table 2).
- 3) Dairy cows paretic at the end of lactation (table 3).
- 4) Dairy cows at parturition with signs of hypocalcemia but not paretic (table 4).

Clinical Observations

The dairy cow with hypocalcemia at parturition usually has several of the following premonitory signs prior to paresis.

Loss of appetite	Difficulty in standing
Constipation	Low and blundering movements
Restlessness	Muscular spasms and twitching
Glassy-eyed	Tendency to lean against objects
Stiffness of gait	Diminished or absence of milk ejection
Slight mental dullness	
Widening of hind straddle	

The above are signs frequently reported as associated with parturient paresis, yet they often have not been considered significant enough to warrant therapy at this time. However, studies reported herein would support such an approach.

Electrolyte Determinations and Related Clinical Signs

The blood serum levels of calcium, magnesium, sodium, and potassium in the accompanying tables are submitted as evidence that hypocalcemia existed when clinical signs were observed.

The only consistent variation in serum electrolytes is in calcium. An occasional in-

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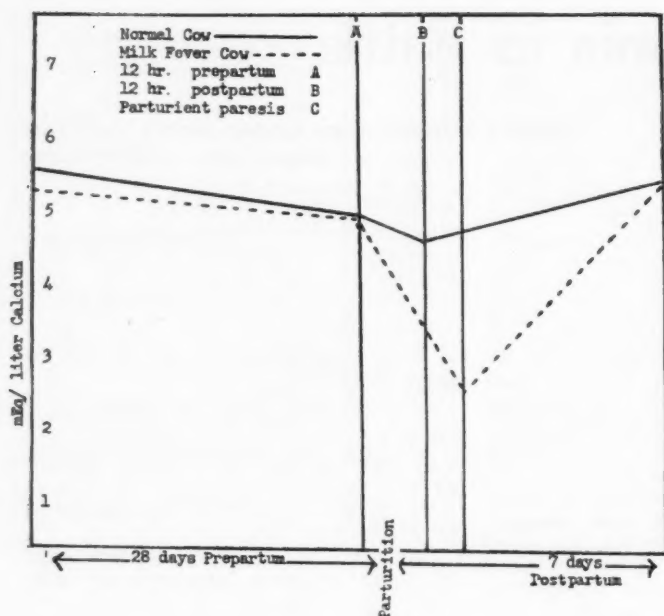


Fig. 1—Changes in serum calcium in a dairy cow at parturition (Hibbs¹⁰).

crease in serum potassium was found and is believed to be associated with trauma to muscle tissues.

Though most cows will have a slight dip in blood serum calcium levels at parturition, some develop paresis while others do not. Those which do become paretic develop the clinical signs described earlier, even though some may have serum calcium levels which are within normal range. This suggests an individual sensitivity to the serum level of calcium. A slight depression in calcium may have a marked effect on some cows and not on others.

Although hypocalcemia is commonly as-

sociated with the parturient cow, it apparently may occur at times remote from parturition. Blood serum electrolyte levels of several cows paretic late in lactation are recorded (table 2) and of others paretic at the end of lactation (table 3). If it were not known that these cows had not recently freshened, parturient paresis would probably be diagnosed. These cows responded to calcium therapy, although not dramatically, since some were unable to rise for several hours.

Of particular interest is the cow paretic at the termination of her milk period (table 3). The "drying-off" procedure in

TABLE 1—Blood Serum Electrolyte Levels of Dairy Cows with Parturient Paresis

Cow (No.)	Date sampled and treated	mEq/liter			
		Ca	Mg	Na	K
Normal range of serum calcium		(4.5-6.0)	(1.2-2.5)	(132-152)	(3.9-5.8)
2691	7/17/57*	5.8	1.59	159	4.3
2575	8/5/57	3.3	1.60	154	6.7
1773	8/10/57	3.2	1.58	152	5.4
2022	8/21/57	2.6	1.70	164	4.6
1495	8/21/57	2.2	1.58	144	4.3
1188	4/15/58**	3.7	1.52	127	5.0
1131	5/30/58	5.2	1.63	142	7.2

*Prepartum. **Fresh 9 days.

TABLE 2—Blood Serum Electrolyte Levels of Dairy Cows Paretic Late in the Lactation Period

Cow (No.)	Parturition date	Date sampled and treated	mEq/liter			
			Ca	Mg	Na	K
Normal range of serum calcium			(4.5-6.0)	(1.2-2.5)	(132-152)	(3.9-5.8)
1594	10/30/56	8/16/57	4.4	1.63	140	4.1
2744	12/22/56	8/27/57	4.3	1.83	139	4.4
3022	12/23/57	7/13/58 ^a	2.9	1.64	138	6.2

*Aborted this date.

the herd studied consisted of partially withholding feed and refraining from milking for a few days during which the udder would fill and occasionally become quite distended.

On occasion, the distention was considered undesirable and the cow was again milked. Within a few hours after emptying the udder, several of these cows became paretic. Possibly a physiologic state similar to that which occurs in the fresh cow has been reproduced with the exception that the period of no milking is considerably shorter than in the normal dry period. The rapid withdrawal of large quantities of milk at any one time may upset calcium equilibrium, and hypocalcemia may be precipitated by the sudden removal of a 2- or 3-day accumulation of milk, a circumstance for which the cow's regulatory mechanisms are ill-prepared.

In any event, if cases such as herein described occur in our herds, some other method of drying-off is recommended, such as complete cessation of all milking, or gradual reduction of the amount milked each day without complete emptying of the udder.

Early Therapy in Hypocalcemia

During the 4 years of observation in this study, the maternity barns of this herd were visited several times daily. For the first year, calcium therapy for cows having any clinical signs of hypocalcemia was deferred, and in most instances paresis followed. With an average of over 2 parturitions daily throughout the calendar year, many cows with parturient paresis were observed. Although therapy after paresis was highly successful, 1 cow died and several others injured themselves as a result of unsuccessful attempts to rise or to remain on their feet.

However, during the next 3 years, calcium therapy was administered at parturition to cows with signs of hypocalcemia, and paresis in treated cows was negligible. Changes in serum calcium associated with parturition in the dairy cow are shown (fig. 1). There are several hours prior to paresis during which serum calcium concentration declines. It is during this period that cows have clinical signs of impending paresis, and it is then that I advocate calcium therapy. Calcium therapy induces a temporary rise in blood calcium level and,

TABLE 3—Blood Serum Electrolyte Levels of Dairy Cows Paretic at the End of Lactation

Cow (No.)	Previous parturition date	Date sample taken and treatment given	mEq/liter			
			Ca	Mg	Na	K
Normal range of serum calcium			(4.5-6.0)	(1.2-2.5)	(132-152)	(3.9-5.8)
2977	5/13/57	5/26/58	3.6	1.48	133	7.4
2742	4/31/57	5/31/58*	3.1	1.66	136	6.3
1576	8/28/57	6/12/58	3.7	1.66	134	6.5
2213	6/21/57	6/12/58	4.5	1.66	132	6.3
9	5/4/57	7/19/58**	4.3	1.64	132	10.5
2591	7/6/57	7/24/58	3.4	1.44	142	7.1

*Repeated treatment 10 hours later.

**Repeated treatment 12 hours later. Although animal did rise and support herself, she died the following day. Death was attributed to sever muscle trauma and hemorrhage caused by attempts to rise.

TABLE 4—Blood Serum Electrolyte Levels of Dairy Cows That Had Signs of Hypocalcemia But Were Not Paretic

Cow (No.)	Date sampled and treated	mEq/liter			
		Ca	Mg	Na	K
Normal range of serum calcium		(4.5-6.0)	(1.2-2.5)	(132-152)	(3.9-5.8)
P R E P A R T U M					
502*	5/5/58	3.8	1.54	136	6.2
3505	5/6/58	5.1	1.54	132	8.2
852	4/29/59	3.6	1.71	130	7.4
171**	5/28/59	5.4	1.63	136	5.4
2612	6/16/59	4.0	1.60	146	5.4
P O S T P A R T U M					
2113	7/3/57	4.8	1.70	150	4.6
1451	7/3/57	4.0	1.79	147	4.1
2007	7/16/57	2.6	1.66	150	4.2
1719	8/6/57	3.8	1.60	163	4.7
1577	8/21/57	2.9	1.73	150	5.2
1577	8/22/57	2.8	1.65	152	4.5
1577	8/23/57	2.6	1.57	150	4.2
502**	5/6/58	4.3	1.64	130	5.1
1183	5/16/58	3.9	1.60	133	5.5
2065	5/28/58	3.0	1.62	142	6.6
3277	5/8/58	4.3	1.60	134	6.6
1739	6/7/58	4.1	1.78	130	4.6
1738	6/13/58	2.7	1.67	138	7.1

*All cows freshened the same date, except cow 502 which freshened 1 day later.

**Sample was taken from and treatment given to this cow 2 days prior to parturition.

presumably, abolishes the clinical signs long enough for calcium to be mobilized from the body reserves for reestablishment of normal calcium levels.

Though some may be concerned with the potential hazard of calcium administration, today's buffered preparations increase greatly the margin of safety. I have not observed any adverse effects from the use of calcium preparations in more than 100 cows with signs of hypocalcemia that were not yet paretic. My primary concern was to avert the paretic state commonly associated with hypocalcemia, for when the cow is in a state of instability her condition is complicated. Myocardial injuries, nephrosis, and hindleg muscular necrosis have been reported in paretic cows; occasionally inhalation pneumonia occurs.

Summary

Clinical signs of hypocalcemia have been observed at various times during the lactation period of high-producing dairy cows and serum electrolyte levels are reported to confirm these observations.

Cows paretic at times remote from parturition and in a state of hypocalcemia respond to calcium therapy. Recovery in all instances is not as rapid as in paresis associated with parturition.

Cows paretic at the completion of their lactation period and in a state of hypocalcemia respond to calcium therapy in the same manner.

Clinical signs of hypocalcemia are reported as being evident in the parturient dairy cow under close observation prior to a state of paresis and with consistent frequency.

Many dairy cows with clinical signs of hypocalcemia and low serum blood calcium levels at parturition have been successfully treated without adverse effects and without subsequent paresis developing.

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Antibiotic Shock in Parrots with Lung Mycosis

In 5 parrots that developed streptomycin-penicillin shock, granulomatous mycotic bronchopneumonia was found. The mycotic character of the disease was considered the cause of the oversensitivity to these antibiotics.—*Monatsh. f. Vet.-med. (German)*, 15, (Sept. 15, 1960): 632-634.

Therapy of Pneumonitis

Following Heartworm Therapy in Dogs

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J. E. GRAGG, D.V.M.

HEARTWORM (*Dirofilaria immitis*) infection in dogs has long been a problem for veterinarians in coastal regions and lowlands of the South where mosquitoes are abundant. In our practice in the Mississippi Delta, we have seen many dogs treated over an extended period with arsenical and antimony compounds and, more recently, with massive doses for shorter periods. Although many dogs were treated successfully for heartworms by either of these methods, we considered the post-treatment mortality high.

The purpose of this paper is to report treatment of 5 dogs which developed pneumonitis as a sequel to heartworm treatment. Treatment employed involved an enzyme preparation containing 2 streptococcic enzymes (streptokinase and streptodornase) and human plasminogen of human placental origin.* Streptokinase is activated by human plasminogen and converts animal plasminogen to plasmin. Plasmin is a fibrinolytic enzyme which is capable of dissolving blood clots and fibrinous exudates. Streptodornase causes depolymerization of desoxyribonucleoprotein and desoxyribonucleic acid, the major constituents of viscous exudates and, thereby, pus is liquefied.²

In the past, we treated this complicating pneumonitis with antibiotics. Our results were not satisfactory. It has been reported that the pneumonia was due to infarcts in the lungs.¹

Treatment

Our standard treatment for heartworm infection consists of caparsolate sodium, 2

mg./lb. of body weight daily, intravenously. We usually repeat the treatment for 3 to 4 days, followed by a rest period of 2 to 4 weeks. Complications often occur 2 to 5 days following the completion of treatment and are manifested as dyspnea, elevated body temperature, anorexia, and pneumonic posture. We have found that immediate treatment with antibiotics and 1 vial of the enzyme preparation (10,000 units of streptokinase and 2,500 units of streptodornase and 1/20 to 1/40 gr. of atropine sulfate) will result in clinical improvement in 48 hours. After his complete recovery, we treat the dog with stibophen, a filaricide, for 3 days. The dosage is 2 mg. of trivalent antimony per 5 lb. of body weight, giving no more than a maximum of 20 mg. daily.

Case Reports

Case 1.—A 43-lb. Pointer with heartworm infection was given 80 mg. of caparsolate sodium for 3 days. Five days later, the dog had clinical signs of dyspnea, elevated body temperature, and pneumonia. One vial of the enzyme preparation and 3,000 units of penicillin and 0.25 Gm. of streptomycin were given the same day. The same treatment was administered the next day. The following day, the dog improved and, by the fifth day following treatment, he had completely recovered.

Case 2.—A 50-lb. Setter was given 100 mg. of caparsolate sodium for 3 days for the treatment of heartworm infection. Four days later, signs of pneumonia appeared, and daily treatment with the en-

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*Varizyme, American Cyanamid Co., New York, N.Y.

zyme preparation and penicillin and streptomycin were initiated at this time for 3 days. Three days after the last treatment, the dog had recovered.

Case 3.—A 50-lb. Pointer was treated for 3 days with 100 mg. of caparsolate sodium for the control of heartworms. Six days after the initial treatment, signs of pneumonia appeared, and the enzyme preparation and penicillin and streptomycin were administered for 1 day. The dog recovered 2 days after this single treatment.

Case 4.—A 40-lb. Pointer was given treatment for heartworm infection consisting of 80 mg. of caparsolate sodium for 3 days. Eleven days later, the dog had clinical signs of coughing with mild dyspnea. Treatment with the enzyme preparation, penicillin and streptomycin, and stibophen were instituted the same day. The same treatment was administered for 2 days, followed by additional treatments with neomycin and B-complex vitamins. The dog was discharged from the hospital on the sixth day following treatment with the enzyme preparation and had completely recovered.

Case 5.—A 50-lb. Pointer with heartworm infection was treated for 3 days

with 100 mg. of caparsolate sodium. Six days after the initial treatment, the dog developed pneumonia. Treatment with the enzyme preparation and penicillin and streptomycin was initiated at this time and continued for 5 days. After the fifth day of treatment, the dog was completely recovered and was discharged from the hospital.

Summary

In dogs, pneumonic signs following arsenical treatment of heartworm infection have been arrested in most cases (5 case histories given) with antibiotic therapy and an enzyme preparation consisting of 10,000 units of streptokinase and 2,500 units of streptodornase and 1/20 to 1/40 gr. of atropine sulfate. Previous to the use of the enzyme preparation, antibiotic therapy alone was largely unsuccessful.

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Glomus Tumor Found in a Dog

A male Dachshund, 10 years old, was presented for medical examination because of apparent pain in the region of the toes of the left forefoot.

On examination of the foot, a nodular lesion was found beneath the digital cushion of the second toe. On the surface were signs of hemorrhage. The nodule was soft and was adherent to the skin but not to the deep layers. Surgical removal was uncomplicated, and postoperative course of recovery was satisfactory. The clinical signs disappeared immediately after the operation, and since then the dog has been in good health.

After gross and microscopic examination of the lesion, a diagnosis of glomangioma of epithelioid type was made. The location, size, growth, and histologic appearance are identical with those lesions described in man when this tumor is involved. This is believed to be the first report of a glomus tumor in a dog.—*J. Comp. Path. and Therap.*, 70, (July, 1960): 374.

Survey of Canine Filariasis

in a Maryland Area—Incidence of Dirofilaria immitis and Dipetalonema

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B. JOSEPH TIBOLA, B.A., V.M.D.

CANINE FILARIASIS seems to be increasing all over the United States.¹⁻³

Although filariasis, as produced by *Dirofilaria immitis*, was at one time thought to have been confined to regions in the South, its prevalence in the North has given much concern recently, especially in the Eastern Coastal regions.

This report concerns a survey of 528 dogs for microfilarial evidence of filariasis. Particular emphasis is placed on the differentiation of *Dirofilaria immitis* and *Dipetalonema* species, since both produce circulating microfilariae of the blood.⁴⁻⁶

Materials and Methods

The survey was started in February, 1959, and continued through April, 1960. Blood samples were collected at random from dogs entering the Hyatts-

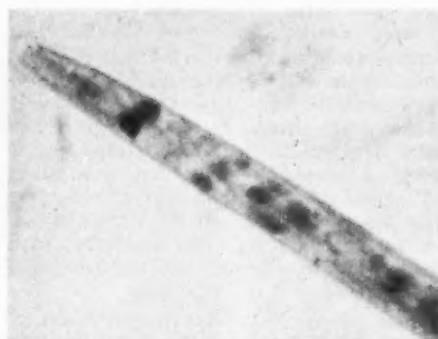


Fig. 1—Structure as seen with the modified Knott's method. The anterior part of this *D. immitis* microfilaria is well-defined. $\times 1,200$.

TABLE 1—A Comparison of Diagnostic Characteristics of *Dirofilaria immitis* and *Dipetalonema* spp.

	<i>Dirofilaria immitis</i>	<i>Dipetalonema</i> species
No. of hematozoan in sample	Many, in most cases	Usually few
Length (μ)	302-340	260-292
Width (μ)	6.5-7.4	4.5-5.2
G-cell pattern	1-23-4	1-234
Tail	Straight	Buttonhooked
Shape of head	Bulblike elongated	Almost square

From Live Stock Sanitary Service Laboratory, University of Maryland, College Park, Md. (Wallenstein), and the Hyattsville Animal Hospital, Hyattsville, Md. (Tibolla).

Mr. Wallenstein is a Major (ret.), U.S. Army.

The authors thank Drs. Arthur L. Brueckner, director, and Leo J. Poelma, chief, of the Live Stock Sanitary Service, College Park, Md., and Drs. J. F. McClure and J. W. Seddon, of the Hyattsville Animal Hospital, Hyattsville, Md., for their suggestions and cooperation.

ville Animal Hospital. Approximately 1.0 ml. of blood was drawn from the cephalic vein in all dogs except 2, in which blood was taken directly from the heart. Immediately after collection, the blood specimen was added to 10.0 ml. of 2 per cent



Fig. 2—The anterior part of this *Dipetalonema* spp. microfilaria has been treated with the modified Knott's method. $\times 855$.

TABLE 2—Description of *Dirofilaria immitis* and *Dipetalonema* spp. Isolated from 6 Canine Blood Samples

Case (No.)	No. of microfilariae
80	+
119	+
192	+
292	+
306	+
498	+

+++ indicates 3-10 per low power field; ++++ indicates 11 or more per low power field.

TABLE 3—Description of *Dipetalonema* spp. Isolated from 28 Canine Blood Samples

Case (No.)	No. of microfilariae	Range of length (μ)	Range of width (μ)
4	+	266-287	4.5-5.0
6	+	260-288	4.5-5.0
14	+	268-276	4.5-5.0
55	++	270-290	5.0-5.2
83	++	266-288	5.0
92	++	268-294	5.0-5.2
98	++	276-283	5.0
105	+	260-278	5.0
143	++	274-290	4.5-5.2
194	++	270-282	4.5-5.0
211	++	264-288	4.5-5.0
238	+	260-280	4.5-5.0
267	++	264-278	4.5-5.0
289	++	260-290	5.0-5.2
300	+	270-280	4.5-5.2
308	+	264-282	4.5-5.0
310	++	274-290	5.0-5.2
328	++	268-292	5.0-5.2
344	+	262-276	4.5-5.0
365	++	270-288	5.0
369	++	268-290	5.0-5.2
371	+	262-274	4.5-5.0
380	+	258-286	4.5-5.0
390	+	266-292	4.5-5.0
420	++	274-290	5.0
458	++	260-280	4.5-5.0
515	++	268-286	4.5-5.0

+ indicates 0-1 per low power field; ++ indicates 1-5 per low power field.

TABLE 4—Description of *Dirofilaria immitis* Isolated from 35 Canine Blood Samples

Case (No.)	No. of microfilariae	Range of length (μ)	Range of width (μ)
18	+++	315-324	6.5-7.0
51	+++	316-322	6.5-7.0
77	+++	306-320	6.5-7.0
129	+++	308-329	6.5-7.0
151	++++	316-330	6.5-7.0
162	++++	312-340	6.5-7.0
206	++++	326-338	6.5-7.0
207	++++	308-322	6.5-7.0
244	++++	304-320	6.5-7.0
283	+++	305-324	6.5-7.0
307	+++	304-328	6.5-7.0
310	++++	304-330	6.5-7.0
324	++++	314-330	7.0-7.4
325	+++	305-326	6.5-7.0
351	++++	318-332	7.0-7.4
352	++++	320-336	7.0-7.4
354	++	302-316	6.5
357	++++	308-326	6.5-7.0
364	++++	304-318	6.5-7.0
376	++++	320-338	7.0-7.4
384	+++	304-322	6.5-7.0
386	+++	304-320	6.5-7.0
387	+++	310-322	6.5-7.0
419	++++	320-338	7.0-7.4
445	++++	316-340	7.0-7.4
460	+++	306-328	6.5-7.0
461	+++	310-330	6.5-7.0
479	++++	318-340	7.0
480	++++	320-336	7.0-7.4
482	++++	316-338	7.0
487	++++	322-340	7.0-7.4
493	+++	310-328	6.5-7.0
520	++++	304-320	7.0
522	+++	302-320	6.5-7.0
527	++++	308-340	7.0-7.4

++ indicates 1-2 per low power field; +++ indicates 3-9 per low power field; ++++ indicates 10 or more per low field.

TABLE 5—Incidence of *Dirofilaria immitis* and *Dipetalonema* spp. Infection in Dogs According to Age

Age of dog	No. of dogs infected with:			
	No. of dogs tested	<i>D. immitis</i>	<i>Dipetalonema</i> spp.	<i>D. immitis</i> and <i>Dipetalonema</i> spp.
11 weeks-6 months	52	.....	1	1
6 months-1 year	39	.....	3	.....
Years				
1-2	50	1	3	1
2-3	55	3	4	.....
3-4	46	2	2	1
4-5	49	5	.....	1
5-6	42	3	2	.....
6-7	28	3	.....	.....
7-8	25	2	1	1
8-9	18	4	.....	.....
9-10	29	6	3	.....
10-11	18	2	3	.....
11-12	15	1	1	.....
12-13	22	2	.....	1
13-14	6	1	2	.....
14-15	6	.....	2	.....
15-16	1	.....	.....	.....
16-17	.....	.....	.....	.....
17-18	2	.....	.....	.....
18-19	1	.....	.....	.....
Unknown	24	.....	1	.....
	528	35	28	6



Fig. 3—The posterior part of a microfilaria as seen using the modified Knott's method. x 855.

TABLE 6—The Incidence of *Dirofilaria immitis* and *Dipetalonema* spp. Infection in Various Breeds of Dogs

Breed	Total No. of dogs tested	No. of dogs infected with:		
		D. immitis	Dipetalonema spp.	D. immitis and Dipetalonema spp.
Mixed breeding	164	6	11	5
Cocker Spaniel	87	4	5	.....
Boxer	44	6	7	.....
Beagle	35	1	2	.....
Collie	28	4	1	.....
German Shepherd Dog	17	1	.....	.....
Dachshund	16	2	.....	.....
Staffordshire Terrier	14	1	.....	.....
Dalmation	13	.....	.....	.....
English Setter	12	3	.....	.....
English Pointer	10	2	.....	1
Wire-Haired Fox Terrier	9	.....	.....	.....
Chihuahua	8	.....	.....	.....
French Poodle	7	.....	.....	.....
Boston Terrier	8	.....	.....	.....
Fox Terrier	7	.....	.....	.....
Schnauzer	5	.....	.....	.....
Scottish Terrier	4	.....	.....	.....
Irish Setter	4	1	.....	.....
Shetland Sheepdog	3	.....	.....	.....
Airedale	3	.....	.....	.....
Springer Spaniel	3	.....	.....	.....
Coonhound	3	.....	1	.....
Boston Bull	2	1	.....	.....
Foxhound	2	1	.....	.....
Chesapeake Bay Retriever	2	2	.....	.....
Doberman Pinscher	2	.....	.....	.....
Pekingese	2	.....	.....	.....
Manchester Terrier	2	.....	.....	.....
Samoyed	1	.....	1	.....
Italian Greyhound	1	.....	.....	.....
English Cocker	1	.....	.....	.....
Pug	1	.....	.....	.....
Maltese Terrier	1	.....	.....	.....
Weimaraner	1	.....	.....	.....
Brittany Spaniel	1	.....	.....	.....
Welsh Terrier	1	.....	.....	.....
Basset Hound	1	.....	.....	.....
Great Dane	1	.....	.....	.....
Old English Sheepdog	1	.....	.....	.....
Border Collie	1	.....	.....	.....
Total	528	35	28	6

In this study, the Knott's concentration method was employed with a modification of the staining method using dextran as the diluent for the methylene blue stain. The formalized samples were centrifuged at 1,500 r.p.m. for 5 minutes and the supernatant fluid decanted. The tubes were inverted

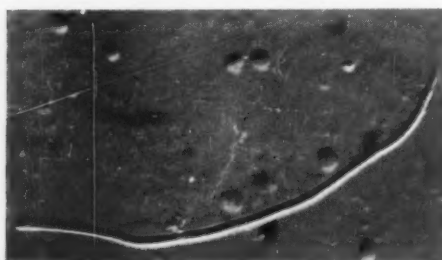


Fig. 4—Photomicrograph of a microfilaria of the *Dipetalonema* spp. with the buttonhooked tail. x 310.

in a test tube rack with the lips resting and draining on a paper towel to extract as much of the moisture as possible, thereby increasing the accuracy of the test. The residue was then mixed with 1 drop of methylene blue stain (1% dye in dextran), and 1 drop of material under a coverglass was examined microscopically. If hematzoa were present, they appeared fairly smooth, straight, and well-defined in structural detail (fig. 1, 2, 3). Measurements of the microfilariae were made with a Filar* micrometer eyepiece with adjustable drumhead permitting accurate measurements within a fraction of a micron. All prepared specimens were given at least 2 separate microscopic examinations before they were considered negative. In many of the positive cases, heparinized blood samples were collected and studied for motility as well as for the G-cell pattern** after a special staining process. In positive

*Bausch & Lomb, Chicago, Ill.

**G-cell pattern is the pattern formed by genetic cell formation.

Fig. 5—A comparison in size of microfilariae of *Dirofilaria immitis* (right) and *Dipetalonema* spp. (left). x 425.

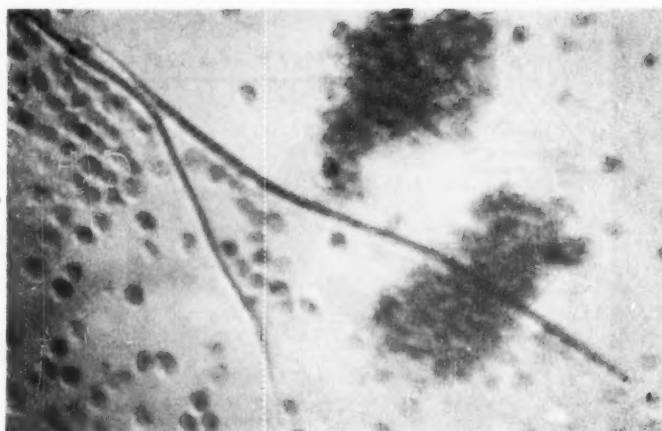


TABLE 7—The Incidence of *Dirofilaria immitis* and *Dipetalonema* Infection in Dogs According to Sex

Sex	Total No. of dogs tested	No. of dogs infected with		
		<i>D. immitis</i>	<i>Dipetalonema</i> spp.	<i>D. immitis</i> and <i>Dipetalonema</i> spp.
Male	267	28	17	3
Female (incl. 22 spayed)	261	7	11	3
Total	528	35	28	6

cases, at least 5 microfilariae were measured for length and width. Certain morphologic characteristics were observed (table 1). The results of the survey are tabulated (tables 2-7).

Discussion

Blood samples were collected from dogs as they were admitted to the veterinary hospital. Most dogs originated within a radius of 20 miles from Hyattsville, Md. Initially, attempts were made to ascertain

TABLE 8—Incidence of *Dirofilaria immitis* and *Dipetalonema* spp. in 528 Maryland Dogs

Type of filaria	Male and female	Male	Female
<i>Dirofilaria immitis</i>	6.63%	80.0%	20.0%
<i>Dipetalonema</i> species	5.30%	60.7%	39.3%
Mixed infection of <i>D. immitis</i> and <i>Dipetalonema</i>	1.14%	50.0%	50.0%
	13.07%-69 dogs		

the place of origin. This information from the pet owners was often vague and unreliable, hence attempts to collect this information were abandoned.

Although results indicate a specific incidence of infection in Maryland, this is not a constant figure, but one that will fluctuate. Dogs visiting enzootic areas even for a short time may become infected and

TABLE 9—Incidence of Filarial Infection of Dogs According to Age

Age of dogs	Infection (%)
11 weeks - 6 months	1.92
6 months - 1 year	7.7
1 - 2 years	10.0
2 - 3 years	12.73
3 - 4 years	14.28
4 - 5 years	11.9
5 - 6 years	10.71
6 - 7 years	16.0
7 - 8 years	22.22
8 - 9 years	31.03
9 - 10 years	27.27
10 - 11 years	13.33
*11 - 12 years	13.64

*Beyond this age group there are too few tests to suggest any conclusive evidence of trends.

thus increase the incidence upon their return. Another factor influencing the incidence is the population influx, which is especially prominent in this area near the nation's capital. People and their pets arrive here from all over the world and their dogs may unsuspectingly carry filarial infection. Also, by this population influx, filarial species heretofore not generally found in this area may become established.

According to our findings, *Dirofilaria im-*

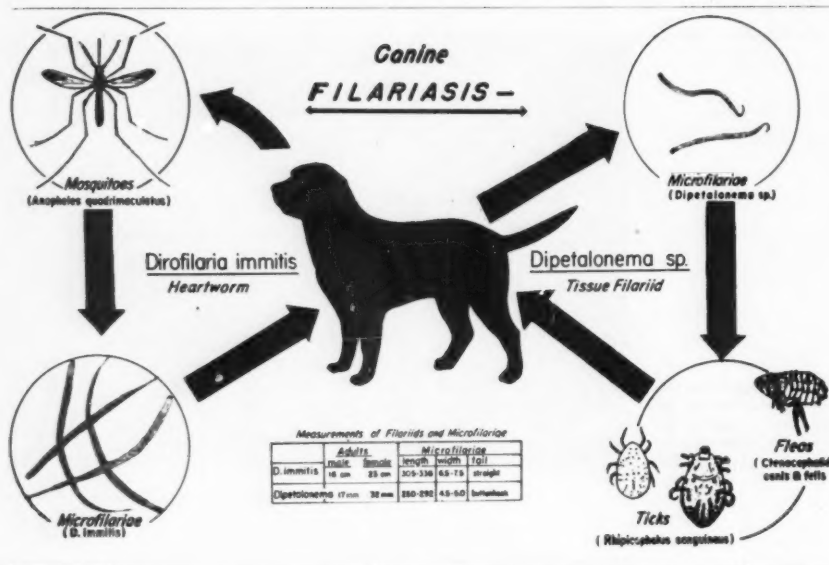


Fig. 6—Epidemiology of canine filariasis.

mitis occurs 4 times as often in males as in females; *Dipetalonema* species, $1\frac{1}{2}$ times as often in males as in females; and mixed infection of both filaria types is equally distributed in both sexes. This survey further suggests that there is a higher percentage of *Dirofilaria immitis* and *Dipetalonema* spp. infection in the Boxer than in other breeds.

On several occasions after a positive diagnosis was made with the modified Knott's technique, direct microscopic examinations of blood smears under coverglass were negative. This points out the necessity of utilizing techniques other than microscopic observation of blood smears alone to make accurate and differential diagnosis. This is especially important regarding *Dipetalonema* species as the microfilariae seem to occur in fewer numbers per unit of blood than does *Dirofilaria immitis*.

Another type of microfilaria which differs from *Dirofilaria immitis* and *Dipetalonema* species has been found in a dog and described.⁷ It is of shorter length (170 μ) but greater in width (8.7 μ). Other morphologic differences are the gradual tapering of the tail to a blunt point and the much plumper over-all appearance. The occurrence of this type of microfilaria was reported to be uncommon. No evidence of this parasite was found in our survey.

Conclusion

From this survey of 528 dogs from a Maryland area, the percentage incidence of filariasis was determined (table 8).

Of the 69 dogs with filariasis, the youngest infected dog was 169 days old; it was infected with *Dipetalonema* spp. Results of the tests according to age group infer that the peak of infection is reached between the ages of 8 and 10 years. After that period, infection incidence seems to level off. The trend of the incidence, as our survey indicates is shown (table 9).

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Treatment of Canine Heartworm Infection

Enrique R. CARLOS, D.V.M.
Arsenio C. DIRECTO, D.V.M.

CANINE HEARTWORM infection, a condition caused by *Dirofilaria immitis*, has reached alarming proportions in our practice during the past 5 years. Most infected dogs came from the southern part of the City of Manila and the suburbs, possibly because, in 1951, the Canine Corps of the Armed Forces of the Philippines quartered at Fort William McKinley (located at about 12 kilometers south of the City of Manila) had imported 162 Japanese German Shepherd Dogs for police work from Japan where dirofilariasis is common.¹⁰ The majority of these dogs harbored a heavy infection of heartworms.

It has always been a problem to choose the correct medication to suppress dirofilariasis. Several available microfilaricidal⁴ and filaricidal^{3,5,8,9} drugs have been used and their efficiency analyzed. Because we were not satisfied with results, we instituted a new scheme of treatment using dichlorophenarsine hydrochloride,* an arsenical preparation given in 2 or 3 daily injections. Favorable results were reported by a number of investigators in the treatment of canine dirofilariasis using this particular drug.^{1,2,6,7} This study was undertaken to evaluate the efficiency of dichlorophenarsine hydrochloride.

Materials and Methods

The 107 dogs involved in these trials were all house pets brought to our veterinary hospital for treatment of various ailments. Dogs of many ages, breeds, and sexes were represented, and some were in

poor physical condition. Ages varied from 1½ to 10 years, the average being 5½ years. Twenty-five were females and 82 males; there were 41 German Shepherd Dogs, 20 Boxers, 7 Great Danes, 6 French Poodles, 6 Airedales, 5 Doberman Pinschers, 5 Cocker Spaniels, 2 Collies, 2 Dachshunds, 1 Boston Terrier, 1 Fox Terrier, 1 German Schnauzer, and 1 English Bulldog.

No attempt was made to improve the general condition of dogs before treatment, except those considered in critical condition with such ailments as anemia, ascites, and liver and kidney dysfunctions. Supportive treatment with iron-dextran, vitamin K and B complex, digitalis, and antibiotic preparations were instituted.

It is our established procedure to examine the blood of dogs entering the hospital whose age is greater than 1 year and with signs of circulatory deficiency or other clinical signs that are suggestive of dirofilariasis such as coughing, tiring easily, anemia, ascites, dyspnea, edema of the legs, and weakness of the hindquarters.

Each blood sample was examined by direct blood smear, drop technique, using blood serum and Ohishi's method.⁷

Concentration Technique by Ohishi's Method.⁷

—Prepare a solution of:

Methylene blue 0.5%	5.0 cc.
Acetone	5.0 cc.
Sodium citrate	0.2 Gm.
Water	90.0 cc.

Nine cc. of the solution is transferred to a graduated centrifuge tube; 1 cc. of blood from the cephalic vein of the dog is added. The tube is inverted several times to mix the contents, the open end of the tube being covered with a finger. The blood is centrifuged at 1,500 r.p.m. for 10 minutes. The supernatant fluid is removed with a rubber bulb pipette and discarded except for a quantity of fluid in the test tube equal in volume to the amount of sediment remaining. About 0.05 to 0.1 cc. of the sediment and remaining fluid is aspirated with a pipette for examination. This is examined microscopically under a 24- by 32-mm. covered glass. This method will permit detection of a small number of microfilariae in 1 cc. of blood as long as they exist in a dog, and is superior to other methods known to us.⁷

It is our routine procedure to perform liver- and

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The authors thank Dr. Seiji Kume, professor and head of the Department of Internal Medicine, Tokyo University of Agriculture and Technology, Tokyo, Japan, for his advice and suggestions.

*Filarsen (contains 15 mg. arsenic per ampule), Fujita Pharmaceutical Co., Ltd., Kami-Osaki, Shinagawaku, Tokyo, Japan.

kidney-function tests before using dichlorophenarsine hydrochloride, as well as to determine blood cell count, erythrocyte sedimentation rate, packed cell volume, icteric index, and differential white blood cell count.

For this study, the following classification was used:⁶

First Stage—Dogs in this category are in the early stages of infection and harbor comparatively few worms. They have generalized clinical signs which might be confused with some other condition.

Second Stage—Dogs in this category have well-established infections, but comparatively few worms. They have typical clinical signs of dirofilariasis.

Third Stage—These dogs have long-standing heavy infections. They are in critical condition.

Discussion of Results

Of the 43 dogs in the first stage of infection, there were no unusual clinical signs during or after therapy and no clinical evidence of pulmonary arterial obstruction. A few had high fever, anorexia lasting only a few days, depression, and occasional coughing. All dogs treated, except 3, had nausea, vomiting, and transient excitement a few minutes after injection. However, these side reactions disappeared quickly. The following case report is typical of a treated dog in the first stage of infection.

Dog 7, a male Boxer, 2 years old and weighing 55 lb., was brought for treatment of moist eczema on the lumbar region, partial anorexia, and listlessness. Microfilariae were found in the blood; his body temperature was 38.8 C., pulse and respiratory rates were 95 and 28 per minute, respectively. The packed cell volume, erythrocyte sedimentation rate, icteric index, r.b.c. and w.b.c. counts, liver function, and urine were normal. Besides treating the skin lesion, 3.0 mg. of urine were normal. Besides treating the skin lesion, 3.0 mg. of dichlorophenarsine hydrochloride (0.75 mg. of arsenic) per kilogram of body weight per day was given intravenously for 2 consecutive days. The day after dichlorophenarsine hydrochloride treatment, the dog was released with instructions and medication for treatment of the skin disease. After 6 months, the blood was examined for microfilariae and none were found. Over-all condition of the dog was good; he had gained 11 lb., was active, and had a smooth and lustrous coat.

Of the 41 dogs in the second stage of infection, 36 (approx. 83%) made satisfac-

tory improvement. Two died of unknown causes and the results in 4 were not reported by the owners. Only 5 of these dogs had been treated with stibophen.* In the treated dogs there was nausea, vomiting, and transient excitement which disappeared a few minutes after injection. There was usually a rise in temperature of 39.5 C. to 40.0 C. in about 5 to 8 days, with anorexia, listlessness, and occasional coughing which lasted for a week or two.¹ Recovery was evident on the second to the fourth week, and the general condition was greatly improved, judging by resumption of normal activity, disappearance of cough, improved coat, good appetite, and increased weight. Following is a case report of a dog with typical dirofilariasis which responded most favorably in this group.

Dog 27, a male German Shepherd Dog, 3 years old and weighing 53 lb., was presented for treatment because of occasional coughing, inactivity, listlessness, gradual emaciation, poor appetite, and labored breathing. Microfilariae were found on examination of a blood smear. His temperature was 39.8 C., pulse and respiration rates were 130 and 42 per minute, respectively. Erythrocyte sedimentation rate was 50 mm. after 1 hour; packed cell volume was 30 per cent; buffy coat, 2½ mm. in thickness; icteric index, 4 units; r.b.c., 4,600,000; w.b.c., 25,750; by bromsulphthalein test, liver function was normal; and urine was normal.

For 2 consecutive days, 3.0 mg. of dichlorophenarsine hydrochloride (0.75 mg. of arsenic) per kilogram of body weight per day was given intravenously. During the course of treatment and afterward, the dog had complete loss of appetite. Body temperature was 40.1 C., the dog was weak and had labored breathing. Parenteral fluid,** 1 liter daily, was given intravenously by drip method. Broad-spectrum antibiotics, vitamin B complex, and iron-dextran preparations were also given. On the fourth day after treatment, his temperature decreased from 39.5 C. until it became normal. On day 7, the dog began to walk around the cage and drank equal parts of skim milk and sugar with an oral electrolyte.† At this time, all parenteral injections were stopped, except vitamin B-

*Fuadin, Winthrop Laboratories, New York 18, N. Y.
**Amigen and †Lyren, Mead Johnson & Co., Evansville 21, Ind.

complex. On day 10, the dog was eating solid food, which consisted of one third horse meat, one third dried dog food, one third enriched rice, plus 2 tablespoonfuls of vitamin-mineral powder.[§] On day 14, the dog had good appetite and resumed normal activity. The erythrocyte sedimentation rate was normal; packed cell volume, 41 per cent; r.b.c. count, 7,650,000; and w.b.c. count, 18,600. On day 15, the dog was sent home.

One month later, when the dog was returned for examination, his clinical appearance was remarkably improved. He had gained weight and was active. Six months later, his blood was examined and microfilariae were present. No significance was attached to this finding, since dichlorophenarsine hydrochloride and other arsenical preparations which destroy the adult worms have no effect on the microfilariae. It has been reported that it takes 9 months to a year before microfilariae disappear, while more than 94 per cent of the adult worms are destroyed within 10 days.⁶

Of the 24 dogs in the third stage of infection, 18 (75%) made a good recovery. Four died, which may be attributed to lowered arsenic tolerance; 2 were euthanatized because of severe infection with esophageal worms (*Spirocerca lupi*); and another died as a result of progressive paralysis of the hindlegs. The total mortality in this group was 6 (25%). Among the treated dogs there was nausea, vomiting, and transient excitement, which disappeared quickly a few minutes after the injection. These side reactions were observed in almost all dogs treated with dichlorophenarsine hydrochloride.

All dogs classified in this third stage were in critical condition due to long-standing heavy infection with heartworms. Treatment was less successful in these dogs, probably due to post-treatment hepatitis and pulmonary embolisms. Although there is real danger in treating dogs with massive infection of heartworms, it was worth the risk since they would have died eventually if not treated.

Most of the common clinical signs observed in dogs with heavy heartworm infection are: ascites, edema of the legs, bilateral paralysis of the hindlegs, chronic cough, dyspnea, tiring easily, bloody diar-

rhea, anemia, cyanosis, eczema, and epistaxis.

Necropsy was performed on the dogs that died as a result of treatment. In all of these, the heart was greatly enlarged and, when incised, a large mass of adult worms bulged out. There were 30 to 86 adult worms in each of the hearts.

Frequently, fibrous thickening and calcification of the chordae tendinae of the tricuspid valve were present. Pulmonary embolisms and chronic passive congestion of the liver were observed in most dogs on which necropsies were performed.

Summary and Conclusion

One hundred and seven dogs with varying degrees of *Dirofilaria immitis* infection were treated intravenously with dichlorophenarsine hydrochloride at the rate of 3.0 mg. (0.75 mg. of arsenic) per kilogram of body weight per day for 2 consecutive days. A total of 2 injections, amounting to 1.5 mg. of arsenic per kilogram of body weight, was given.

Dogs in the first group reacted satisfactorily to the treatment except for 3 in which there was nausea, vomiting, and transient excitement. They recovered. Dogs in the second group also made satisfactory improvement, although in all dogs in this group there were signs of nausea, vomiting, and transient excitement immediately after injection of the drug. In the third group, 4 dogs died. Their deaths were attributed to a lowered arsenic tolerance. In all dogs treated in this group, the same signs observed in the second group occurred just after injection of the drug.

Currently, the control program for canine heartworm infection in the Pacific Air Force sentry dogs, as reported by another investigator,¹ consists of prophylactic dosage of dichlorophenarsine hydrochloride at the rate of 3.0 mg. per kilogram of body weight for 2 consecutive days. This dosage is based on experience in Japan, where the infectious season is restricted during summer and all worms infecting dogs during that period complete their migration to the heart by the end of January. The prophylactic treatment is given in February. This destroys most of the worms after they migrate to the heart and before they cause any disturbance, such as post-treatment pulmonary embolisms and injury to the

[§]Vionate, E. R. Squibb & Sons, New York 22, N. Y.

liver and other internal organs. The worms in the heart are easier to destroy than those in the intermediate developmental location such as in the submuscular membranes, subcutaneous tissue, fat tissue, subserosa, and muscles of the whole body.⁷

However, in the Philippines, where the infection persists throughout the year due to the presence of mosquitoes acting as intermediate hosts, the treatment should be given every 6 months.

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Hundred Swine Herds on SPF Program in Iowa

More than 100 Iowa swine herds are in various stages of development now as specific pathogen-free (SPF) herds.

The oldest herd in the program started natural farrowings last June, and the owner will try for certification in December for Iowa's first naturally farrowed SPF herd.

Many of those now raising SPF swine are farmers who have lost a large part of their herds to disease or have had atrophic rhinitis on their farms to such an extent that it has become impossible to raise pigs profitably.

At the present time, the SPF herds in Iowa include representatives of Duroc, Yorkshire, Black Poland, Spotted Poland, and Chester White breeds, besides some commercial herds.

The SPF programs began in Iowa less than 2 years ago. Permits for 18 laboratories have been issued in the state, and 7 of them are already in operation.—*Information Service Release, Iowa State University, Ames, Nov. 16, 1960.*

Spirocerca lupi

in Unusual Locations

R. D. TURK, D.V.M., M.S.

TENTATIVE identifications of many parasites are often made on the basis of location and comparative size of the parasite. However, many parasites, particularly those that have a migratory phase, may appear almost any place in the body of the host animal.

In 1956, the nematodes, *Dirofilaria immitis* and *Ancylostoma braziliense*, were reported¹ in unusual locations.

Spirocerca lupi (Rudolphi, 1809) frequently is found in mature dogs in the southern United States. On examination of 146 dogs from southern Texas, the incidence of infection increased with the age of the animal, 15.28 per cent of young, mature dogs and 18.18 per cent of aged dogs were infected.² All lesions reported occurred esophagus and aorta. However, lesions have been found in the stomachs of other dogs examined at College Station.

On Feb. 26, 1960, a necropsy was performed on a male hound, 3 years old. A small subcutaneous abscess was found in the left inguinal region. When excised during routine examination, 2 nematodes were found which were identified as a mature male and a mature female *S. lupi*. The female contained numerous embryonated eggs.

On April 19, 1960, preserved tissues from a 7-year-old dog were received. According to the history, the blood urea nitrogen level was so high that it was not measured. Both kidneys had gross lesions typical of chronic nephritis. Protruding from the capsule of one kidney, near the middle, was a coiled reddish worm approx-

imately 1 mm. in diameter and 2 to 3 cm. long (fig. 1).

The tentative diagnosis of chronic nephritis was confirmed by microscopic examination. The worm was identified as a mature male *S. lupi*. It was thought to have no relation to the severe nephritis.

This is believed to be the first reported

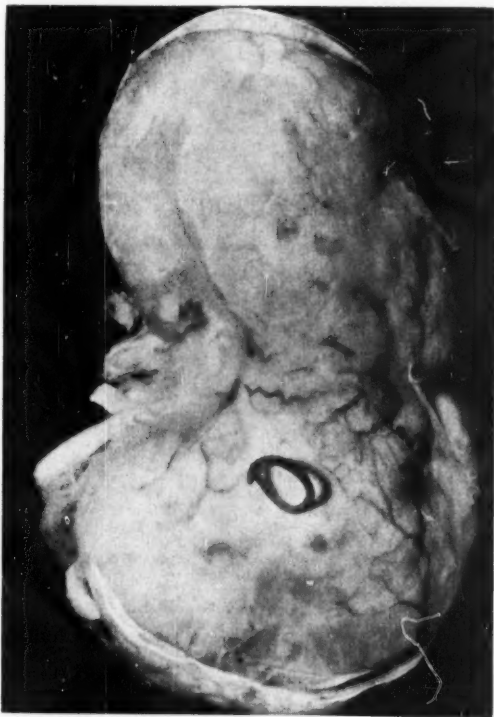


Fig. 1—*Spirocerca lupi* lies coiled on the dog kidney from which it was isolated.

The author is professor and head, Department of Veterinary Parasitology, A. & M. College of Texas, College Station.

occurrence of *S. lupi* in a subcutaneous nodule or in kidney tissue.

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²Barron, C. N.: *Spirocerca lupi* Infections in Dogs. M. S. thesis, A. & M. College of Texas, College Station, 1950.

A Card Reference File for the Practitioner's Library

In making my library of periodical literature useful to me as a practitioner, 4- by 6-inch cards indexed by subject have proved to be most beneficial. A subject may be made as specific or broad as necessary on the basis of the quantity and quality of literature concerning that subject. For in-

stance, articles on bovine mastitis may be classified under one of the following categories: Mastitis, Bovine—General; Mastitis, Bovine—Etiology; Mastitis, Bovine—Testing; or Mastitis, Bovine—Control and Treatment. Likewise, references to a specific bone disease of cats might be found under: Feline, Cat Practice, or more specifically Osteogenesis Imperfecta.

My index on veterinary subjects has been gleaned from the 8 journals to which I have subscribed, plus all the trade publications that I have received during the past 7 years. It took some time initially to index all the journals I had collected, but now as I read, I just scribble the subject classification in the margin of the article and have it typed on the file card at a later time. To have a separate card for each title would make a bulky reference system. Therefore, I list all the articles on a particular subject on one card, using the title and publication identification only. Publication identification includes abbreviated name of publication, volume, page number, and date. I also include worthy abstracts. If the title of an article does not describe its contents adequately, I change it. If the article is of questionable value or simply an advertisement disguised as a so-called "case report" without sufficient supporting evidence, I discard it.

I have had many opportunities to make use of this card indexing system. Without it, I feel that my library of periodical data (which is more up-to-date than that in hard-bound books) would be worthless.—Allen Wolff, D.V.M., Brunswick, Ohio.

Sample Index Cards

STEATITIS see also mink, cat practice, vitamin E
Streatitis (yellow fat) in cats fed canned red tuna.
JAVMA 133:563 12/1/58
Canned red tuna dangerous to cats.
MVP 40:75 4/15/59
Therapeutic experiences with feline steatitis.
MVP 40:45 8/1/59
Experimental production of steatitis in kittens.
Vet Exc 15:24 1955
"Yellow fat" in two laboratory cats: acid-fast
pigmentation associated with a fish-base ration.
Vet Exc 14:81 1954
Effect of butylated-hydroxy-toluene, diphenyl-para-
phenylenediamine and other additives on reproduction
and steatitis in mink fed fish diets.
J An Sci 18:1534 11/59

RESTRAINT see also tranquilizers
The propulsive administration of nicotine as a new
approach for capturing and restraining cattle.
JAVMA 134:283 3/15/59
The use of nicotine for restraint of a vicious
patient with dystocia. MVP 40:55 8/1/59
Sedative restraint in the dog.
Vet Med 49:281 7/54, Vet Exc 15:21 1955
The use of avertin in capturing wild turkeys and
as an oral basal anesthetic for other wild animals.
Vet Exc 16:92 1956
Long range restraint. Jen Sal J 2/58 p. 26
Casting cattle—Burley's technic.
Biochem Rev 26 #3 p. 22 Fall 1956
Electric ejaculator: a means of restraint.
MVP 40:72 12/1/59

Editorial

Why Tuberculosis in Livestock Is Increasing

Guest Editorial

In 1918, when the present state-federal cooperative tuberculosis eradication program first got under way, nearly 5 per cent of all cattle tested were infected with the disease.

A year earlier, in 1917, nearly 50,000 beef carcasses had been condemned because they were unfit for human consumption. Equally important, federal meat inspectors had found nearly 200,000 carcasses infected with tuberculosis in addition to those found and condemned as a result of tuberculin testing.

Through a careful program of testing, eliminating reactors, cleaning and disinfecting, and quarantine, the tuberculosis infection rate was reduced to a low point of 0.11 per cent of all cattle tested in 1952, or 11 animals in every 10,000.

In 1953 and 1954, the percentage of reactors remained at this level, but in 1955 the trend was reversed and the number of reactors began to increase. Except for 1960, each year since that time the incidence of infection continued to rise until, in 1959, the disease was found in a total of 23 of every 10,000 animals tested. The significance of the slight decrease in the percentage of reactors found in 1960 can only be judged in the light of future developments.

Why has the percentage of tuberculous cattle increased so dramatically in the United States in six years? This tremendous increase is due to the cumulative effects of a complex group of factors, many of which had their beginnings during the period of World War II.

For example, during those war years there was not only a shortage of veterinarians but a shortage of trained help throughout agriculture. Travel was restricted because gasoline and tires were difficult or impossible to obtain. Dwindling veterinary manpower and emphasis were directed to other war-born problems.

Throughout the years following accreditation of the 48th state in 1940, another major problem developed. The incidence of tuberculosis appeared to be steadily dropping; as a result, livestock producers, disease control officials, and the public became complacent. Along with complacency came a gradual shift in interest to other diseases. Thus, as tuberculosis received less and less emphasis, funds for research, testing, and education were gradually reduced at the same time program costs were rising.

War and complacency created other far-reaching problems. In a good many states, herd testing lagged. And some states simply failed to maintain minimum requirements for county reaccreditation.

During these years, a growing livestock population meant an increasing number of susceptible animals. More and better trucks, better highways, and changing patterns of livestock production resulted in a tremendous increase in the movement of these animals. Auction markets and sales rings helped to stimulate this movement, and often indirectly helped to spread the disease from one area to another.

Livestock disease control officials and veterinarians, too, must accept a share of the responsibility for the increase in this costly and dangerous disease. Because in many cases this group shared in—and contributed to—the complacency that developed.

In the early days of the program, veterinarians gained broad field experience in applying and interpreting the tuberculin test. At the same time, special conference programs were provided to stimulate interest and maintain uniformity in program procedures. Failure to continue these close contacts, plus the increased number of participants in the program, resulted in less attention to approved techniques.

Failure to emphasize the importance of proper cleaning, disinfecting, and quarantine procedures in dealing with infected premises also contributed to the increase in tuberculosis.

Part of the reported increase is also due to the fact that coordinated efforts have been made in the past three years to increase the care and uniformity with which tuberculin tests are conducted.

Tracing to the herds of origin those animals found to have lesions of tuberculosis during routine inspection at slaughter, carefully tracing the origin of reacting animals found in routine herd testing, tracing and follow-up tests of all exposed animals—each has served to increase the total of reactors detected.

These, then, are perhaps the major factors responsible for the alarming increase in bovine tuberculosis in the United States.

Obviously, this increase cannot be attributed to one single factor, but rather is the result of a combination of all.

Responsibility for the failure to wage a continuing fight against tuberculosis until it had been successfully eradicated from every segment of our livestock population cannot be placed on the doorstep of any particular individual or group. Rather, it is a responsibility that must be accepted and shared by each of us. Only by accepting that responsibility and directing our future efforts to positive action can we hope to repair the damage that has been done and move ahead toward the goal of tuberculosis eradication.—A. F. Ranney, D.V.M., chief staff officer, tuberculosis eradication, Animal Disease Eradication Division, Agricultural Research Service, USDA, Washington, D.C.

Say It Better • • •

There is a tendency to use the word *immunize* when the speaker or writer really means *vaccinate*. Technically, the former should be used only when it is known that the level of immunity resulting from the vaccination was sufficient to protect against natural exposure to the disease. To say that "... some of the pigs immunized against hog cholera died from this disease 3 months later" is hardly correct. The pigs had been *vaccinated* but not *immunized*.

It is often said that vaccinated animals are challenged. Although this may apply to matadors and fighting bulls, the disease investigator usually challenges the *immunity* of the animal—not the animal itself.

from the *Research Journal*

Optimal Age of Mice for FMDV Studies

Rockefeller strain-H mice, 5 to 21 days old, were studied to determine the age ranges from which equivalent response to foot-and-mouth disease virus (strain 119, type A) could be expected.

Mice 5 to 14 days of age were found to be equally susceptible to virus activity.

Resistance to the lethal effect of the virus increased rapidly after the sixteenth day.

—[J. H. Graves and G. C. Poppensiek: *Determination of the Optimal Age Range of Mice for Use in Experimental Studies with Foot-and-Mouth Disease Virus*. *Am. J. Vet. Res.*, 21, (July, 1960): 694-696.]

Rapid Test for Viability of *Fasciola Metacercariae*

A rapid, simple, and economical method for determining the viability of *Fasciola hepatica* metacercariae was developed by studying the effects of various artificial digestion mediums. Active excystation of viable metacercariae is induced by treating them first with pepsin solution (0.5 Gm. of pepsin, 0.8 Gm. of NaCl, and 100 ml. of n/20 HCl) for 2 to 3 hours and then with

trypsin solution (0.4 Gm. of trypsin, 0.8 Gm. of NaCl, 1.0 Gm. of NaHCO₃, and 100 ml. of distilled water) supplemented with 20 per cent ox bile for an additional 2 to 3 hours.—[T. Wikerhauser: *A Rapid Method for Determining the Viability of *Fasciola hepatica* Metacercariae*. *Am. J. Vet. Res.*, 21, (Sept., 1960): 895-897.]

Differentiation of Quail Bronchitis and Infectious Bronchitis Viruses

Five strains of quail bronchitis virus (qbv) and 18 strains of infectious bronchitis virus (ibv) were tested for heat stability. The viruses, in chorioallantoic fluid diluted 1:100 in nutrient broth, were held at 56 C. for 15 to 90 minutes. For the differentiations, heat stability was indicated by the production of dwarfing, visible by candling, in at least 3 of 5 chicken embryos inoculated with the heated material.

All 5 strains of qbv remained viable after 90 minutes at 56 C. Fifteen strains of ibv were inactivated in 15 minutes. Three strains of ibv survived 15 minutes but did not consistently survive 30 minutes.—[R. T. DuBose, L. C. Grumbles, and A. I. Flowers: *Differentiation of Quail Bronchitis Virus and Infectious Bronchitis Virus by Heat Stability*. *Am. J. Vet. Res.*, 21, (Sept., 1960): 740-743.]

New Books

The Urine of the Dog and Cat—Analysis and Interpretation

This book is the most complete compilation of information pertaining to urine of domestic animals that is available at the present time. Although specifically designed for examination of canine and feline urine, the fundamental principles, tests, and interpretations could just as well apply, in most cases, to urinalysis in other species. Included are methods of urine collection and preservation, normal and abnormal characteristics and constituents, sediment, calculi, and the characteristics of urine in specific diseases.

The only omission is that of pictures of

significant structures in urine sediment, identification of which is a constant problem to student and practitioner alike.

This comprehensive, well-written manual merits the attention of all veterinarians and students who desire a practical addition to their diagnostic aids.—[*The Urine of the Dog and Cat—Analysis and Interpretation*. By Frank Bloom. 84 pages. Gamma Publications, Inc., P. O. Box 53, Gracie Station, New York 28, N. Y. 1960. Price \$3.75.]—MAXINE M. BENJAMIN.

Microchemical Methods for Blood Analysis

This handbook is devoted to the use of microtechniques designed for minute blood specimens obtained with micropipets, using standard laboratory equipment and reagents, and adapted especially for the Coleman Jr. spectrophotometer. Included are methods for analyses of 26 common blood constituents most frequently requested of the clinical laboratory, for which a degree of accuracy is claimed comparable to macromethods. Each method presents detailed directions for preparing reagents and standards, step-by-step procedures, precautions and notes on tech-

niques, calibration procedures, human normal values, and references.

This book should be of value to those conducting research on animals and to small animal practitioners who recognize the need for simple, accurate micromethods which require a minimum of special skill and equipment.—[*Microchemical Methods for Blood Analysis*. By Wendell T. Caraway. 109 pages. Charles C Thomas, Springfield, Ill., 1960. Price \$5.25.]—MAXINE M. BENJAMIN.

A Short History of Veterinary Medicine in America

With the centennial year of the AVMA approaching, it seems rather likely that some of us may be asked, "Just what has the veterinary profession done in the past hundred years?" Those who have been in practice for 25 to 50 years have a fair idea of the progress that has been made, but it would be more unfortunate if the best ever some of us could come up was only that our profession has existed for a century. Until recently it would have been difficult to find a ready-made answer to the question, but this little book supplies us with a concise summary of major developments in American veterinary medicine.

Actually, the size of the book is deceptive, for in a scant hundred pages Dr. Bierer presents a sparkling distillation of his extensive unpublished researches on the subject, patiently compiled over a period of two decades or more. Obviously, in a work of this nature, not everything relating to the profession has been included; more pertinent than what has been omitted is the fact that the significant developments have been given adequate treatment.

Beginning with a broad view of the economic and sociologic climate in which veterinary practice has had its origins, Dr.

Bierer traces the effects of the great animal plagues on American agriculture, the role of veterinary medicine in the development of effective disease control, and the broad aspects of education in the progress of the veterinary profession.

Veterinarians who may have been reluctant to delve into their background for fear of finding the skeleton of a horse doctor in the closet will find renewed faith in their chosen profession. For while a majority of individual veterinarians—quite understandably—were primarily concerned with the treatment of horses belonging to individual owners, veterinary scientists of the Bureau of Animal Industry were compiling a record of achievement the likes of which the world had never seen. The stories of the havoc wrought by the several animal plagues—Texas fever, hog cholera, and pleuropneumonia—and the scientific detective work required to solve these problems, are matters that can be related with pride as representative of the highest ideals of service of the veterinary profession.

A decade or two ago there would have been, perhaps, little reason to believe that

any save a few unique individuals would be interested in veterinary history. And although Dr. Bierer's book was published in 1955, it is particularly pertinent to call attention to it at this time; not only has the climate for reception of such works improved considerably, but there is good reason to believe that an awareness of our background can be made to work for us. Aside from the fact that an approaching centennial is an especially appropriate time to delve into historical matters, there is a continuing need for placing the story of veterinary medicine before the public.

Veterinarians who have the opportunity to appear before the public will find facts and philosophy in Dr. Bierer's book that can be used to substantiate their own faith in the veterinary profession. More than this, the book is of interest for its own sake; it is written with finesse and without wasted words and can be comprehended in its entirety in a sitting or two.—[*A Short History of Veterinary Medicine in America*. By B. W. Bierer. 113 pages. Michigan State University Press, East Lansing, Mich. 1955. Price \$3.00.] —J. F. SMITHCORS.

New Foreign Books

Bibliographie des deutschsprachigen Schrifttums zur Erforschung und Bekämpfung von ansteckenden Tierseuchen (Bibliography on German Literature About Research on and Prevention of Reportable Epizootics). Edited by Dorothee Rühlmann. 482 pages. S. Hirzel Verlag, Leipzig C 1, Schuhmachergässchen 1-3. 1960. Price \$5.15.

Der Huf. Lehrbuch für den Hufbeschlagschmied (The Hoof. Textbook for the Farrier). By Hermann Ruthe. 198 pages; illustrated. Gustav Fischer Verlag, Jena, Villingang 2. 1959. Price \$4.30.

Die Brucellose der Haustiere (Brucellosis of Domestic Animals). By Martin Seelemann. 248 pages; 12 tables. Ferdinand Enke Verlag, (14a) Stuttgart-W. Hasenbergsteige 3. 1960. Price \$12.00.

Die Rinderpest (Rinderpest). By Lothar Hüssel. 83 pages; illustrated. S. Hirzel Verlag, Leipzig C 1, Schuhmachergässchen 1-3. 1960. Paperbound. Price \$2.70.

Exenterianleitung (Instructions in Evisceration). By Fritz Preuss. 51 pages; illustrated. Paul Parey Verlag, Berlin SW 61, Lindenstr. 44-47. 1960. Price \$1.65.

Histologischer Kurs—Teil I: Technik, Zellen- und Gewebelehre, allgemeiner Organaufbau (Course in Histology—Part I: Technique, Cytology, and Histology, General Structure of the Organs). By Günther Hoffmann. 159 pages; illustrated. Gustav Fischer Verlag, Jena, Villingang 2. 1959. Price \$6.00.

La Mélasse dans l'Alimentation du Bétail (Molasses in the Alimentation of Cattle). By R. Ferrando and G. Theodossades. 132 pages; illustrated.

Vigot Frères, Editeurs, 23, rue de l'Ecole-de-Médecine, Paris-6. 1960. Price approx. \$3.00.

Leitfaden der Ziegenkrankheiten (Manual of Goat Diseases). By Wilhelm Schulze. 124 pages; illustrated. S. Hirzel Verlag, Leipzig C 1, Schuhmachergässchen 1-3. 1960. Price \$2.50.

Le Parasitisme en Pathologie Aviaire (Parasitism in Avian Pathology). By Jacque Euzéby. 104 pages; illustrated. Vigot Frères, Editeurs, 23, rue de l'Ecole-de-Médecine, Paris-6. 1960. Price approx. \$3.00.

Moderne Entwicklungen auf dem Gestagengebiet —Hormone in der Veterinärmedizin (Modern Developments in the Field of Reproductive Hormones —Hormones in Veterinary Medicine). 6th Symposium of the German Association for Endocrinology, Kiel, April 28-30, 1959. Edited by Henryk Nowakowski. 441 pages; illustrated. Springer-Verlag, Heidelberg Platz 3, Berlin-Wilmersdorf, 1960. Price \$24.00.

Modernisation des Abattoirs (Modernization of Abattoirs). By F. Malfroy. 164 pages. Vigot Frères, Editeurs, 23, rue de l'Ecole-de-Médecine, Paris-6. 1960. Price approx. \$4.00.

Pathologische Histologie—Leitfaden der Histopathologie für Studierende der Veterinärmedizin (Pathologic Histology—Manual of Histology for Students of Veterinary Medicine). By Georg Pallasse. 457 pages; illustrated. Gustav Fischer Verlag, Jena, Villingang 2. 1960. Price \$12.00.

Tierärztliche Drogenkunde (Veterinary Drug Encyclopedia). By Hans Bentz. 285 pages; illustrated. Gustav Fischer Verlag, Jena, Villingang 2. Price \$4.30.

News

Second Annual Conference of Constituent Association Secretaries Meets

Communication with the member was the theme of the Second Annual Conference of AVMA Constituent Association Secretaries at the Conrad Hilton Hotel, Chicago, Ill., November 5-6.

Forty-two secretaries of constituent associations, 4 of these from Canada, attended the sessions as well as 9 AVMA Executive Board members, 4 officers, and 9 staff members. Canadian representation at the meeting came from the provinces of British Columbia, Nova Scotia, and Saskatchewan, and the Canadian V.M.A.

During this year's meeting, some of the

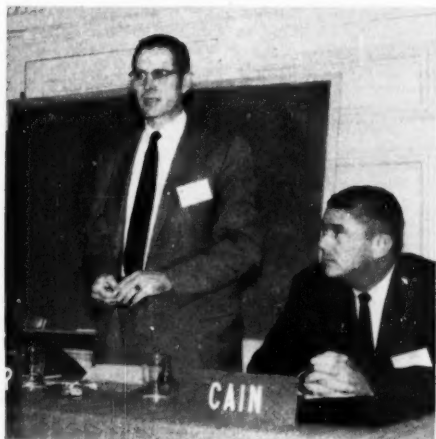
topics discussed were communicating with non-members; communication between local, regional, state, and national veterinary medical associations; liaison with allied groups; communication between state associations and state examining boards; communication between AVMA and constituent associations; and publications as a link with the member. Most of the speakers were secretaries of constituent associations telling of their own experiences in one of the areas mentioned above.

Here's what happened at the meeting from beginning to end:



Coffee, an essential at any meeting, was served to the secretaries during registration. It was good and strong, too, to keep them awake.

"Veterinarians don't have to be lonesome — their profession is highly organized," said Mr. Russell Rongren, AVMA business manager in leading off the sessions. He pointed out that there are 370 veterinary associations in the country and that 273 of these are local associations. "In fact," Mr. Rongren said, "no one needs to be lonesome because there are more than 1700 national associations in this country to join. We are exposed to associations from the time we are born — American Obstetrical Society to the day we are buried — National Funeral Directors Association. We even have them from the top of our heads — Master Barbers Association — to the soles of our feet — National Association of Chiropodists."



"There are 1,000 veterinarians in Ohio, and 830 of these are Ohio State V.M.A. members. We keep records on members and non-members alike," said Dr. R. E. Rebrassier, Ohio State V.M.A. executive secretary. Dr. Rebrassier said that keeping in touch with all veterinarians in the state is important and that the Ohio State V.M.A. maintains an addressograph and folding machine to help make quick mailings to them. In his presentation entitled "Membership Records of Members and Non-members," Dr. Rebrassier listed membership forms used in Ohio as: application form, letter notifying applicant his membership application is being processed, record cards, membership cards renewed each year, and statement forms.



"Membership application forms should be set up so that veterinarians are proud to sign them," said Dr. C. B. Hostetler, Illinois State V.M.A. secretary in leading off the morning panel discussion on communicating with non-members. Speaking specifically about membership requirements and applications, Dr. Hostetler said that applications provide the chance to get essential information about the individual. He pointed out that a long wait before notice of official acceptance is sent to the applicant is bad. Some states require approval of an applicant by the executive board only, others require approval by the executive board and the house of delegates. Dr. Hostetler said that if a long wait is necessary, the applicant should be told when he can expect to receive notice of acceptance.



"The heart of association strength and meaning is membership," said Mr. Paul Cain, Texas V.M.A. executive secretary in his presentation on membership development. "The hard core of existing membership is the key to new membership. Let graduating classes know about your organization. Legitimate, dignified, professional publicity may also draw members," he said. Providing members with services is an association's reason for being, he added. Let your members know what you are doing and they will spread the word." He pointed out that in January, 1960, there were 370 Texas V.M.A. members and that now there are 760 members at a doubled dues rate. He attributed this to better communications.



"Put your members to work," recommended Dr. L. M. Borst, Indiana V.M.A. secretary. "They will then become a needed part of the organization and not be so likely to fall away." Dr. Borst in discussing "Why Does a Veterinarian Become a Non-Member," said it is the job of the association to inform the membership of what is being done and to keep him interested in it.



"What are you getting for your state dues? You are participating in the selection of state V.M.A. officers, selecting the executive committee, choosing the state society's delegate to the AVMA convention, receiving publications, and benefiting from the society's committees on public relations, legislation, ethics, and grievances. You're also eligible for special insurance benefits and to serve on the committees of your society," said Dr. John R. McCoy, New Jersey V.M.A. secretary, in describing how he has answered the question.



What was the audience doing? Listening, learning, and talking during the discussion periods provided after each panel presentation.

"Services must be in the best interest of all the members of an association and the public it serves. Dynamic leadership and sound policies are the best services you can provide to your members," said guest luncheon speaker Leo E. Brown, director of the Communications Division, American Medical Association. "Stimulate participation of members in association activities," he recommended. "He then becomes a part of and not apart from the organization. He is a member." Mr. Brown pointed out that an organization is only as strong as its membership is vigorous. Services must be in proportion to the number of members and staff of an organization, because providing them takes money and people. "A member must

be informed, not uninformed or misinformed about his organization," he said. He described the methods used by the AMA in keeping its membership up-to-date.



Mr. Kenneth Humphreys, California V.M.A. executive secretary, spoke about the necessity of veterinarians maintaining sound liaison with allied groups. Mr. Humphreys pointed out that unless veterinarians participate in legislative activities the profession will lose touch with the major issues involving their own profession. Organizations concerned with dairying, agriculture, cattlemen, wool, and feedmen are performing activities closely allied to veterinary interests and need veterinary influence. "Sometimes we will need their help and support, and at other times, they will need ours. Communications is a two-way street," he said. He recommended participation of members in allied group activities.

Dr. W. J. O'Rourke, Wisconsin V.M.A. secretary, discussed communication between local, regional, state, and national veterinary medical associations. Dr. O'Rourke urged greater communication and exchange of ideas between local societies. He recommended that state V.M.A.'s serve as integrators of local society activities and provide the means for a better flow of ideas between them. He suggested further effort be made to improve the means of communicating AVMA policy and activities to state and local people.





Not scheduled to appear on the program, but called upon to comment on maintaining sound legislative liaison, General J. A. McCallam, AVMA Washington representative, spoke briefly about the self-employed tax deferment bill, HR 10, the American Thrift Assembly, and the need for veterinary medical society cooperation in securing information for Congressional investigation committees.



Dr. Morton Wolfe, Massachusetts V.M.A. secretary, in his presentation on communication between state associations and examining boards, recommended that: state associations should improve, strengthen and bring their state practice acts up to date; submit a list of names to the governor or legislators suggesting people to serve on the state examining board; ask the board wherever possible to accept the results of tests given by the American Board of Veterinary Examiners; request the state board to interview an individual before the test is given; and work to maintain sound liaison with state examining boards.



Three AVMA officers, an Executive Board member, and a representative of the House of Delegates appeared on a panel to discuss communication from AVMA's Executive Board and House of Delegates to constituent associations. Dr. James R. Hay (second from right), AVMA director of professional relations moderated the panel. Others shown here are: (from left to right) Drs. C. M. Rodgers, vice president; N. W. Pieper, chairman, House of Delegates Advisory Committee; J. O. Knowles, Chairman, Executive Board; Mark L. Morris, president-elect; and at the podium, E. E. Leasure, president.

AVMA President, Dr. E. E. Leasure, reviewed and explained the actions taken by the House of Delegates and the Executive Board at their meetings in Denver, Colo., last August.



Dr. Mark L. Morris, AVMA president-elect, called post-graduate veterinary medical educational lectures a state level responsibility. He said "AVMA officers and board members cannot lecture on scientific subjects. When they accept speaking engagements, they must concern themselves with discussing policy and the good of the organization."



"The veterinarian should act and look and feel like a doctor—which he is. This is one of the best ways of communicating our professional standing to the public," said Dr. J. O. Knowles, chairman of the Executive Board. Dr. Knowles also discussed current Executive Board business with the secretaries.





Dr. N. W. Pieper recommended that delegates elected by state societies come to AVMA House of Delegates meetings with instructions from the state association on how to vote on controversial matters. He said the advisory committee to the House of Delegates recommends actions and screens resolutions, at all times drawing on the background of its expert members. He called the advisory committee and the House of Delegates "knowledgeable bodies."

Dr. C. M. Rodgers, AVMA vice president, said that perhaps members should be given a greater opportunity to know about the major issues to be brought before the House of Delegates and the Executive Board. He felt that better coverage of these issues in AVMA publications might be one way to accomplish this.



Dr. Frank A. Todd, assistant to the administrator, Agricultural Research Service, USDA, was the dinner speaker at the meeting. During his presentation entitled "Emergency Programs and Organized Veterinary Medicine," he said "Veterinarians can apply their knowledge of medicine to human beings in emergencies. . . . If you don't take this responsibility and do something about learning first aid and emergency procedures, someone else is going to take it from you. We must learn to protect ourselves and care for others in case a disaster does occur."

And, of course, everyone
ate, too!



Dr. D. A. Price, AVMA editor-in-chief, suggested that policy pertaining to editorials should be decided when a new publication is begun. He explained that signed editorials appearing in the JOURNAL are the expression of the opinion of the author. If an editorial is left unsigned, it expresses the opinion of the Executive Board or the AVMA staff or both. Dr. Price moderated the panel on Sunday morning that had a theme of "Publications as a Link with the Member."



Dr. J. T. Dixon, North Carolina State V.M.A. secretary, suggested ways to make publications more interesting. Some of his recommendations were to use attractive layout, to use pictures, to make articles short and to the point, and to select editors who want to make the publication a success and will work at it.





"Publications aren't in existence to make money, they're in existence to provide a service," said Mr. Claude Ramsey, Rocky Mountain Veterinarian publisher. "The Rocky Mountain Veterinarian is a non-profit, break-even publication," he said, "although a considerable part of our efforts in publishing is getting the advertising dollar. That's becoming more and more competitive." He also said that sound, accurate reporting was important if the readers' interest in the publication is to be maintained.

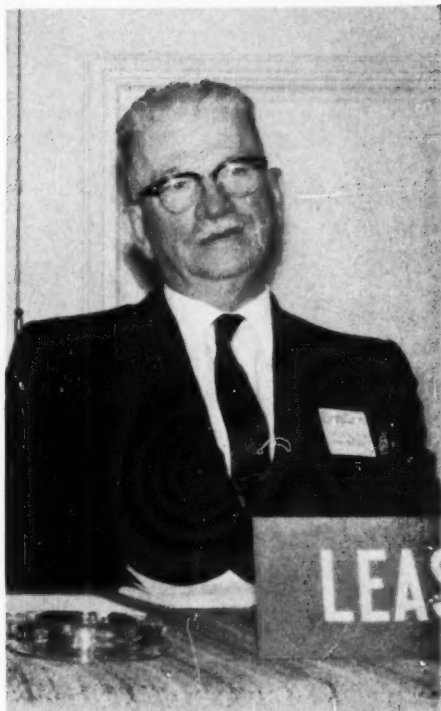


"Publications are to promote togetherness in an organization," said AVMA assistant editor, Dr. Arthur Freeman during his slide presentation. Dr. Freeman illustrated with slides several good methods being used by state veterinary medical publications to attract reader interest.



"I know of no other organization that has the high percentage of membership that AVMA has. Eighty per cent of the country's veterinarians are AVMA members. Somewhere along the line we must have done a good job of communicating with our members. But the job is by no means complete—there is still the other twenty per cent," said Mr. Richard D. Morrison, AVMA administrative assistant. Mr. Morrison also discussed plans for the 1961 AVMA Research Fund Development Campaign.

"Let's keep our profession strong," urged AVMA President Dr. E. E. Leasure during his luncheon speech on Sunday. "Medicine, dentistry, and pharmacy have all begun programs of career recruitment in the past year. Veterinary medicine should also intensify its program along these lines. We must go after the superior student," he said. He urged that veterinarians never turn down the opportunity to speak to youth groups and that they make an effort to place the booklet "Veterinary Medicine as a Career" into as many students' hands as possible.



AVMA Executive Board Plans Prospectus, Hears Progress Reports

The Executive Board of the American Veterinary Medical Association voted November 4 to allocate \$25,000 for the first stages of development of an association prospectus. For further information on these plans see page 8.

The Executive Board also received reports from the centennial planning committee, the committee on constitution and bylaws, and the committee on ways and means.

Some of the plans reported by the centennial planning committee were that consideration is being given to arranging tours in conjunction with the meeting in New York in 1963 to eastern parts of the United States and perhaps to Europe for the World Veterinary Association meeting August 14-21, 1963, in Hanover, Germany. It has been suggested that special exhibits depicting the development, changes, and improvements in veterinary services in the United States and Canada be prepared. Other plans reported by the committee were the preparation of a special centennial emblem for the Associa-

tion, arrangements for publicity of the centennial in the JOURNAL in 1962-63, and the preparation of a suitable plaque to be placed in Astor House at New York City, site of the first AVMA meeting.

The committee on constitution and bylaws reported that it is currently studying such matters as the mail ballot election of AVMA president-elect and vice president; the requirement of maintenance of membership in constituent societies for an individual to remain a member in good standing of AVMA; the possibility of increasing voting strength of associations having enough members for more votes in the AVMA House of Delegates than the present maximum of seven; the duties of immediate past presidents and vice presidents of the AVMA; and the establishment of a separate section on regulatory veterinary medicine.

The committee on ways and means reported that they are continuing to study the future needs of the headquarters office of the Association with respect to location and facilities required.

Among other matters considered at the Executive Board meeting was the question of hospitality suites at AVMA conventions.

After considerable study the Executive Board decided to continue the prohibition of the use of hotel facilities for general entertainment purposes by commercial companies. However, the Board felt that the Association should provide areas where friends can meet and visit.

Considerable time at the Executive Board meeting was given to discussion of plans to expand space for scientific and educational exhibits at AVMA conventions. It is believed that well-planned scientific exhibits, prepared and conducted by one or a group of persons interested in describing a special technique, procedure, or disease, would have great educational value. AVMA staff members are studying ways of promoting and implementing the program.

Dr. C. W. Bower, Past President of AVMA, Dies

Dr. Charles W. Bower (KSU '18), 64, of Topeka, Kan., died Nov. 22, 1960 from cerebral hemorrhage.

Dr. Bower was the recipient of the AVMA Award in 1955, an award given only to AVMA members who have distinguished themselves by selfless devotion to the profession of which they are members and the science which they serve. In accepting the award in 1955, Dr. Bower had said "Years ago, when I first graduated from the School of Veterinary Medicine at Kansas State College, I decided, in order to receive benefits, it was necessary to give."

And give to his profession, Dr. Bower certainly did. He served as president of the



Dr. C. W. Bower

AVMA in 1943-44. He served 9 terms as president of the National Board of Veterinary Medical Examiners, from 1950 to 1956 and from 1958 to 1960, the time of his death. He has been chairman of AVMA's Judicial Council since 1958. He was named chairman of the Educational Commission for Foreign Veterinary Graduates in 1959. He was, at the time of his death, secretary of the Kansas State Board of Veterinary Medical Examiners.

Dr. Bower was also past-president of the Missouri and Kansas State Veterinary Medical Associations and of the American Animal Hospital Association.

Dr. Bower had maintained a hospital and clinic in Topeka since 1919. He had established the first small animal hospital in Kansas.

Dr. W. A. Aitken Settles in Florida

AVMA Editor Emeritus, W. A. Aitken (ISU '17), who retired Sept. 30, 1959, is now residing at 1006 Bay Breeze Terrace, Largo, Florida.

Dr. Aitken was editor-in-chief of AVMA publications from Feb. 9, 1952 to June 30, 1959.

Norwegian Kellogg Foundation Fellow Visits AVMA

Dr. Reidar Vollan, a Kellogg Foundation Fellow from Norway who spent three-and-a-half months in the United States last summer studying animal disease control and eradication, took time when he was passing through Chicago on his way home to visit with the staff at the AVMA central offices.

Dr. Vollan, who is a regional chief veterinary officer for Norway's Ministry of Agriculture, spent most of his time in the United States at the School of Veterinary Medicine, University of California, Davis. During his stay he also attended the AVMA convention in Denver last August and the livestock sanitary meeting in West Virginia. He visited the schools of veterinary medicine at the University of Illinois, Cornell University, and Michigan State University.

Dr. Vollan, who speaks fluent English,



Dr. Reidar Vollen of Norway discusses AVMA publications with AVMA Editor-in-Chief Dr. D. A. Price.

German, and French, said there are between 550 and 600 veterinarians in Norway. The country has a population of less than four million. He also said veterinarians in Norway prefer large animal practices. Fees for veterinary services in Norway are set by the Norway V.M.A. throughout the country. Veterinarians also collect for the number of miles they travel in making a call.

Governmental veterinary service in Norway is broken down into regions and then districts. There are 191 district veterinarians who serve on a part-time basis.

USDA Slates Study of Spread of Animal Diseases

A special task force has been named by the U.S. Department of Agriculture to study the spread of Salmonella and other disease-causing organisms among poultry and livestock by the interstate movement of animal by-products. Economic implications of the problem will also be studied.

As a result of the investigation, the task force will recommend additional safeguards needed to prevent spread of poultry and livestock diseases across state and territorial lines.

Dr. Francis J. Mulhern, associate director of USDA's Animal Disease Eradication Division, will direct the study. He will lead the task force in a review of all information available within USDA and other government agencies on the spread of animal diseases by means of animal by-products such as meat scraps, tankage, hides, bones,

dried blood, and other materials used in feeds and fertilizers.

The task force will make recommendations to groups and individuals within the livestock and poultry industries, to veterinarians, to state animal disease control agencies, and to colleges and universities. Others having information pertinent to this study are invited to present it to the director, Animal Disease Eradication Division, Agricultural Research Service, U.S. Department of Agriculture, Washington 25, D.C., by Dec. 30, 1960.

Among the States and Provinces

California

NEWLY FORMED V.M.A. HOLDS DUAL PURPOSE MEETING.—The Sierra V.M.A., organized in 1959, has set out to prove that education and enjoyment can go hand-in-hand in planning their next convention.

The meeting will be held Feb. 12-17, 1961, at Mammoth Mountain Inn, Mammoth Lakes, Calif. Four scientific presentations will be made on "The Relationship of the Veterinarian and the Pet Shop Owner," "Dermatology in Veterinary Medicine," "Treatment of Uremia," and "Feline Practice." The balance of the time is allotted to such things as skiing, ice skating, ski instruction, and dancing.

The Sierra V.M.A. hopes to hold such meetings at various winter resorts in the United States for veterinarian-winter sports enthusiasts.

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TELEVISION APPEARANCE SCHEDULED AS PUBLIC RELATIONS ACTIVITY.—Dr. George Eberhart (KSU '41), El Cerrito practitioner, recently appeared on a television program, entitled "Pet Life," broadcast to the Bay Region area, to further public relations for California veterinarians.

During the program, Dr. Eberhart demonstrated methods of handling an injured animal, told of the need to phone the veterinarian so that he can prepare for the ar-

rival of the emergency case, and described the practitioner's usual examination of the animal to determine extent of injuries and treatment. He used radiographs, plasma, and an oxygen tank to illustrate his presentation.

Colorado

COLORADO STATE UNIVERSITY RECEIVES GRANT FOR PATHOLOGY STUDY.—The College of Veterinary Medicine at Colorado State University, Fort Collins, has been awarded a training grant of \$178,000 to be used by the Department of Pathology and Bacteriology.

The 5-year grant was given by the National Institutes of Health to help alleviate the shortage of veterinary pathologists.

A training program set up with grant funds will offer curriculums leading to M.S. and Ph.D. degrees. The grant is expected to support 4 trainees who will devote full time to their studies and the associated research problems. An adequate stipend will be paid to each graduate student, starting July 1, 1961.

Dr. J. C. Flint (COL '32), professor of pathology at Colorado State University, has been appointed director of the program.

Graduate veterinarians interested in special training in the field of animal pathology should apply to Dr. Flint.

Maryland

SOCIETY AIRS PROGRAM OF VETERINARY LAY EDUCATION.—Joining the many state societies now producing radio programs to tell the public more about veterinary medicine, the Maryland V.M.A. initiated its weekly, 15-minute radio series July 23, 1960.

The program, entitled "Speaking of Pets," is monitored by Tom O'Connor and features a member of the Maryland V.M.A. speaking on a specific topic related to pet care.

The first program on traveling with pets was presented by Dr. Leonard Krinsky, Baltimore. Other subjects discussed during the series have been skin diseases of pets, by Dr. Vic Sorgen, Baltimore; rabies, by Dr. Robert Watson, public health veterinarian; first aid for pets, by Dr. Walter Mitchell, Annapolis; and modern surgery your pet.

The taped programs will be available to other stations throughout Maryland.

New York

NEW YORK STATE VETERINARY COLLEGE APPOINTS VISITING PROFESSOR OF VETERINARY ANATOMY.—Dr. Fritz R. Preuss, director of the Institute of Veterinary Anatomy of the Free University of Berlin, has been appointed visiting professor of veterinary anatomy at Cornell University's New York State Veterinary College.

The veterinary faculty of the Free University was established in 1951 when a mass migration occurred of faculty and students from the 160-year-old veterinary school of Humboldt University in East Berlin.

Dr. Preuss, 43, was born in East Prussia. He received his doctorate in anatomy at the veterinary school in Hanover, where he was a student of Otto Zietzschmann, the leading authority of his time on the structure and development of domestic animals. From 1945 to 1955 Dr. Preuss taught gross and microscopic anatomy and experimental embryology at Hanover. In 1955 he accepted his present position at Berlin. He was elected dean of the Veterinary Faculty for the years 1959-1960 and 1960-1961.

His research interests have ranged from applied veterinary anatomy and the functional changes in the histology of the bovine uterus to problems of systematic comparative anatomy and nomenclature. His studies of homologies in domestic animals and man have contributed greatly to better understanding of their similarities and differences which are critical to the use of experimental animals in medical research, and to the adaptation of advances in human medicine to veterinary science.

Dr. Preuss is the editor of the "International Bibliography of Veterinary Anatomy."

Quebec

QUEBEC V.M.A. DISCUSSES CIVIL DEFENSE, RECENT HOG CHOLERA CASES.—At the recent annual meeting of the Association of Veterinary Medicine of the Province of Quebec, Dr. Jacques Saint-Georges, professor at the veterinary medical school in Montreal, discussed the role veterinarians should play in civil defense activities and in planning services in case of disaster.

Also at the meeting Dr. Henri Troalen, veterinarian of the federal Department of Agriculture in Canada, discussed a recent

hog cholera scare. He said that although four cases of hog cholera have recently been reported in the area "... this is no epizootic, and the farmers have no reason to be panic-stricken." He told of the precautions that had been taken by Canada's federal veterinary inspectors to prevent the spread of the disease.

Officers elected at the meeting are: Drs. Joseph Nadeau (MON '40), president; Jacques Saint-Georges (MON '40), first vice-president; Henri Troalen (MON '42), second vice-president; and J. B. Phaneuf (MON '51), secretary-treasurer.

Dr. Hartman had spent 12 years in government veterinary service, and then had maintained a general practice in the Bellevue area.

Henry J. Hayes (CIN '10), 75, Memphis, Tenn., died Oct. 7, 1960.

Dr. Hayes had maintained a general practice in Helena, Tenn., for 29 years. He then served as an inspector for the USDA. He had retired several years ago.

N. J. A. Hederen (CVC '11), Chicago, Ill., died Sept. 19, 1960.

Deaths

Star indicates member of AVMA

Arthur L. Danforth (COR '11), 76, Snyder, N.Y., died Oct. 14, 1960.

Dr. Danforth had maintained a small animal hospital near Buffalo until he retired about five years ago.

James E. Doran (OSU '50), 46, Bellefontaine, Ohio, died Oct. 8, 1960, as a result of a hunting accident. Dr. Doran, who was squirrel hunting on a farm near his home, had apparently placed his rifle against a fence while he climbed over. The gun discharged, fatally wounding Dr. Doran.

He was a government inspector for the USDA, and acted as inspector for the Logan Packing Co.

Harry P. Gray (WES '05), 21, Springfield, Mo., died May 31, 1960.

Dr. Gray had practiced in Missouri throughout his lifetime, the last 30 years with Dr. H. C. Tuck (MCK '08) in Springfield, Mo. He had retired a year before his death. He was made a lifetime member of the Missouri V.M.A. in 1955.

Clark F. Hartman (OSU '10), 76, Bellevue, Ohio, died Oct. 3, 1960, following a heart attack.

***Daniel B. Leininger** (KCV '06), 81, San Francisco, Calif., died Oct. 8, 1960.

Dr. Leininger had retired from the Army in 1943 with the rank of Colonel. He was a life member of the AVMA.

***H. Sydnor Miller** (GWU '14), 74, Richmond, Va., died Sept. 29, 1960.

Dr. Miller had served the USDA in the Bureau of Animal Industry for 18 years before his retirement in 1956. On the occasion of his retirement, Dr. Miller was presented a life membership in the AVMA.

O. Q. Mosey (CVC '13), 70, Reinbeck, Iowa, died Oct. 17, 1960.

J. G. Porter (IND '11), 71, Lubbock Texas, died Sept. 27, 1960, after suffering a heart attack while on vacation.

Dr. Porter had been an employee of the Bureau of Animal Husbandry for many years.

***Webster G. Reed** (CVC '18), 65, retired chief of the USDA's Insecticide Division, died Oct. 10, 1960.

Dr. Reed had directed the division for 12 years before his retirement in 1957. Earlier he had been assistant chief of the USDA's Meat Inspection Division. He had been a member of the AVMA and of the National Association of Federal Veterinarians.

Women's

Auxiliary

Public Relations Ambassadors Deluxe

Much of the progress the veterinary profession has made in the past 20 years can be attributed to the dedicated wives of many veterinarians, especially members of the Women's Auxiliary. The woman who states proudly, "My husband is a veterinarian," is truly his best public relations ambassador.

The woman who works in a hospital as his receptionist or his assistant naturally makes a profound impression, either good or bad, on the veterinarian's clients. This fact is readily recognizable. But a more subtle, though none the less important, impression is made by the woman who lists her occupation as "housewife" as she sandwiches in a hot meal for her often tardy spouse, between PTA, her favorite charity, and the complicated social lives of several offspring.

As her husband's public relations representative, both to present clients and to prospective ones, she instills confidence in his proficiency as a veterinarian in a number of subtle ways.

It is important for the veterinarian's wife to take active part in as many community activities as she can without shirking her home responsibilities. In so doing, she is a constant reminder to the public of her husband's profession. Not all women possess qualities of leadership, but they all possess qualities that can be assets to groups and can be used to great advantage in increasing their husbands' practices. If a woman performs her volunteer duties efficiently and willingly, she creates a favorable impression of her husband as a solid community-minded citizen and an able practitioner.

Another way a wife may help her husband is by making sure even casual contacts know who she is and what her husband does. But this must be done in an inoffensive manner. For example, if she has a long

wait in the doctor's or dentist's office and strikes up a conversation with the person waiting beside her, it never hurts to say, "My name is Jane Smith. My husband is Dr. John Smith, a veterinarian."

Sometimes the veterinarian's wife finds herself in an awkward situation, as in this instance: While her husband was out on a call one evening, a veterinarian's wife was held a captive audience for 30 minutes on the telephone by a farm woman who was convinced that her son-in-law had shot her cow. The woman wanted a veterinarian's written confirmation that the cow had been shot. The veterinarian's wife was forced to listen to all the ramifications of a family argument.

Ordinarily one should listen sympathetically to the often lengthy accounts of the illnesses of friends' pets, interrupting the conversation at intervals with appropriate sympathetic acknowledgments. The animal may not recover any more quickly, but it's amazing the confidence a veterinarian's wife can engender in clients just by listening sympathetically.

Also, in regard to telephone conversations, the tact of a diplomat is required. One must listen to descriptions of clinical signs and yet avoid making a diagnosis or prescribing treatment. The veterinarian's wife should concentrate only on getting the telephone number down correctly without getting it mixed up with junior's arithmetic.

Today's veterinarian has come a long way since he was termed a "horse doctor." His increasingly important role in the health and well-being of the modern community is being reported more and more over radio and television and by newspapers and magazines. But even considering the important role the modern communications media have played in up-grading veterinary public relations, the individual practitioner's best public relations ambassador is still his wife.

s/Mrs. A. M. SIMPSON, *vice president*
for publications

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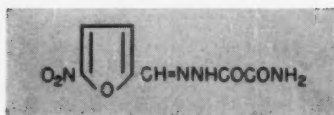
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References: 1. Osborne, J. C.: New Horizons in Chemotherapy: Proceedings of The First Regional Conference on the Nitrofurans in Veterinary Medicine, June 5, 1958. 2. Henry, R. T., and Blackburn, E. G.: Vet. Med. 52:122 (Mar.) 1957.

WHAT IS YOUR *Diagnosis?*

Make your diagnosis from the picture below — then turn the page ▶



Fig. 1—Dorsoventral radiograph of the left hindfoot of the Greyhound.

History.—Examination of a 3-year-old Greyhound bitch that had been retired from racing revealed a fistulous tract, the opening of which was surrounded by an apparently long-standing ulcer on the toe of the fifth digit of the left hindfoot. Lameness was not apparent. A dorsoventral radiograph of the foot was taken (fig. 1).

Here Is the Diagnosis

(Continued from preceding page)

Diagnosis.—(A) Osteomyelitis, (B) fracture of the articular cartilage and synovitis, (C) sequestration, and (D) periostosis (fig. 2).



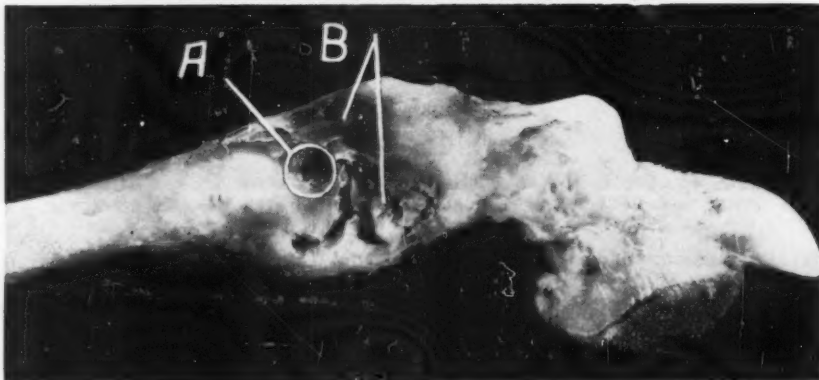
Comment.—The successful treatment of lesions of this kind depends upon removal of the sequestrum (fig. 3), curettage of the necrotic bone, establishment of drainage, and systemic use of antibiotics. Following curettage, the ulcer and fistula should be packed with sterile petrolatum gauze and bandaged. If the lesion remains dry and the foot does not swell or become irritated, it is recommended that it not be redressed for at least 10 days. Frequent redressing is to be avoided unless indicated. Substantial blood levels of antibiotics should be maintained until drainage has stopped and the fistula and ulcer have closed by granulation. The progress of healing should be examined by weekly radiographic observation. The periostosis may be expected to disappear when inflammation subsides.

In this particular case, treatment was not instituted.

This case report was presented and prepared by Wayne H. Riser, D.V.M., M.S., Kensington, Md.

Fig. 2—Dorsoventral radiograph of the left hind foot of the Greyhound showing (A) osteomyelitis, (B) fracture of the articular cartilage and synovitis, (C) sequestrum, and (D) periostosis.

Fig. 3—Photograph of the toe with the skin removed, showing the sequestrum in situ (A). Notice the inflammatory tissue around the sequestrum. (B).



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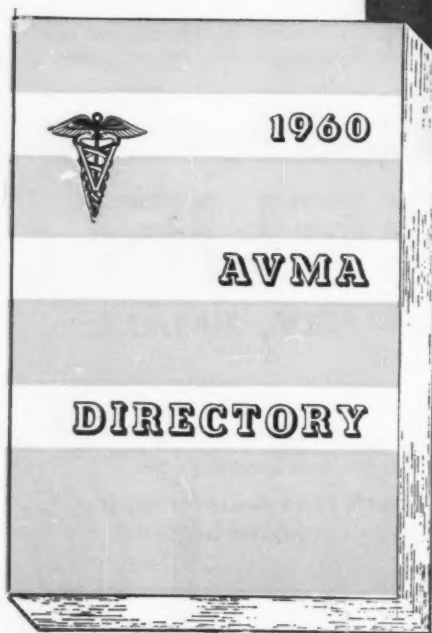


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History of the AVMA

The AVMA meeting for 1900 was held in Detroit. In his presidential address, Leonard

1900

Pearson dealt with the status of the veterinarian and called for greater attention to "what might be called the physiologic phases of animal husbandry." Historians have credited Dr. Pearson with the suggestion that the title of *veterinarian* be relinquished in favor of *animal engineer*. In 1911, W. H. Hoskins asserted that Pearson "coined the name 'Animal Engineer,' and for the field of comparative medical science that of 'animal engineering.'"

While it is true that a number of self-styled "comparative pathologists" were playing down the fact that they were veterinarians (and occasional dissatisfaction with the designation is still encountered) this certainly was not the case with Dr. Pearson. In his address he used *veterinary* (profession) or *veterinarian* 48 times to once for *animal engineer(ing)*. What Dr. Pearson said was, "With his knowledge of comparative anatomy, physiology, chemistry, foods, and the predisposing and exciting causes of disease, the veterinarian should be the natural expert . . . on problems relating to all phases of animal husbandry. Before this can occur largely it will be necessary for the public to relinquish the idea that veterinarians are useful only to patch up decrepit animals or to check the spread of disease, and be educated to regard them as experts in animal husbandry—as animal engineers. . . . Each *veterinarian* [italics ours] should extend his knowledge and

his practice, and become an expert in animal engineering."

In speaking on "The Relation of Veterinary Medicine to the Public Health," W. H. Lowe observes: "It seems strange, from the standpoint of the veterinary profession, that the public is so slow in supporting and encouraging what veterinary science is capable of doing for the health and lives of the people themselves." But with regard to pet dogs and pocketbooks—animal health and wealth—veterinary medicine is "in the great majority of instances, appreciated."

It seems that Dr. Lowe's request "that the relation of veterinary medicine to the public health shall be discussed as its importance demands," did not go unheeded. The transmission of sarcoptic scabies of horses to man was reported by M. E. Knowles; rabies was discussed by D. E. Salmon, M. P. Ravenel; and tuberculosis by Austin Peters and R. R. Dinwiddie; who said, ". . . we do have cases of tuberculosis in the human being derived from cattle." In determining what was or was not fit for human consumption, Tait Butler urged greater attention to "The Relation of the Lymphatics to Meat Inspection."

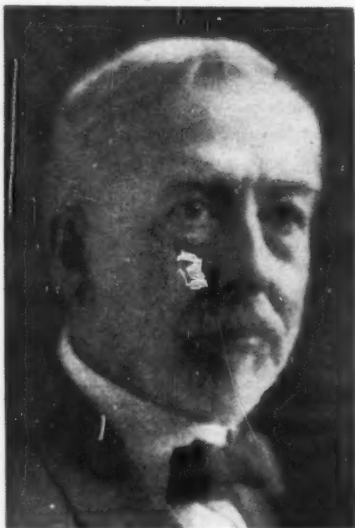
Tait Butler was elected president of the Association; SESCO Stewart and W. H. Lowe were re-elected secretary and treasurer, respectively.

+ + +

Tait Butler was a native of Ontario and graduated with honors from the Ontario Veterinary College in 1885, after which he began a general practice in Davenport, Iowa. He was an organizer of the Iowa V.M.A. and served as secretary (1888-89) and president (1889-90). From 1891 to 1909 he was Professor of Veterinary Science at Mississippi, Kansas and North Carolina, successively, retiring from the latter post to become editor of the *Progressive Farmer*, in which capacity he continued until his death on Jan. 13, 1939. In 1934 he was awarded a medal for distinguished service to agriculture by the American Farm Bureau, and his many friends in the South urged his appointment as Secretary of Agriculture in 1932.

He was 38 years old when elected president of the AVMA in 1900, but it is evident that he had a broad grasp of veterinary problems. He had first come to the attention of Association members in 1886 when he won the USVMA prize essay contest.

Tait Butler, AVMA president from 1900 to 1901.



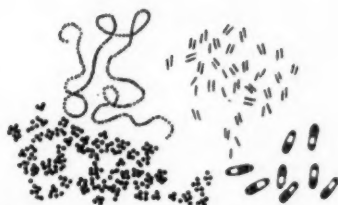
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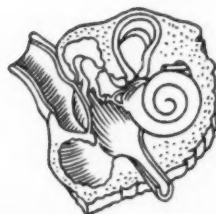
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Geigy Appoints Dr. McCarty to Veterinary Research Post

Geigy Agricultural Chemicals, Division of Geigy Chemical Corporation, announced the



Dr. Robert T. McCarty

appointment of Dr. Robert T. McCarty (TEX '49) as Staff Veterinarian, Research Department.

Dr. McCarty will direct the veterinary product development program at Geigy and will be responsible for liaison with United States clinics and schools of veterinary medicine.

APPLICATIONS

Applicants Not Members of Constituent Associations

In accordance with paragraph (c) of Section 1, Article I, of the Bylaws, the names of applicants who are not members of constituent associations shall be published in the JOURNAL. Written comments received by the Executive Secretary from any active member regarding the application as published, will be furnished to the Judicial Council for its consideration prior to acceptance of the application.

LIN, TONG CHI

Veterinary Hospital, National Taiwan University
Keelung Road, Section 3
Taipei, Taiwan, Republic of China
D.V.M., M.S., Veterinary College of Chinese Army,
1947.
Vouchers: Logan M. Julian and Walter S. Tyler.

MADISSOO, HARRY

231 Powers St.
New Brunswick, N. J.
D.V.M., Veterinary College, Hanover, Germany, 1960.
Vouchers: L. E. Van Petten and James Varley.

KRONFELD, DAVID S.

500 Michell St.
Ridley Park, Pa.
B.V.Sc., University of Queensland, 1952.
Vouchers: D. K. Detweiler and Robert R. Marshak.

Radioactive Contamination May Occur Through Livestock

At present, food contamination through radioactivity is due almost exclusively to fall-out from nuclear weapons. This contamination may be increased by peacetime activities such as mining of radioactive ores, fuel processing, installation of reactors, and use of radioactivity in medicine, industry, and agriculture. At present, radioactivity in food presents no immediate danger.

Radioactive contaminants are transferred to man by specific routes through food chains. For instance, barium¹⁴⁰ goes from the atmosphere to vegetation, to cattle, to milk, to man.

Strontium, cesium, and iodine, the other chief radioactive contaminants, have more complicated routes, including soil and meat products.—*Cornell Univ. News Bureau, Dec. 13, 1959.*



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REFERENCES: Teigland, M. B.: Proceedings of the 4th Annual Meeting, Amer. Assn. of Equine Pract., Chicago, Illinois, 1959. Witter, R. S.: Paper read at the Third Regional Conference on the Nitrofurans in Veterinary Medicine, Atlanta, Georgia, January 14, 1960.

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**Convenient—a concentrated, ready-to-use
solution that can be administered
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Rapidly absorbed from injection site

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Quiz for Quidnuncs

1. Given at usual dosage levels, how soon after intramuscular administration of dihydrostreptomycin and intravenous administration of chlortetracycline are these antibiotics eliminated from cow's milk? Page 700.
2. Is oxytetracycline in treated quarters of dairy cows transferred to untreated quarters? Page 703.
3. What orthopedic technique proved successful in fixation of a distal epiphyseal fracture in a Shetland pony? Page 711.
4. Why was colostomy performed in a pig? Page 713.
5. In connection with what parasitic infection in dogs has enzyme therapy been employed advantageously? Page 714.
6. What is the difference between *Dirofilaria immitis* and *Dipetalonema* spp.? Page 716.
7. Why is tuberculosis in cattle increasing? Page 727.

Dr. S. A. Vezey Named Director of Clinical Medicine at Jensen-Salsbery Laboratories

Dr. Stanley A. Vezey (TEX '44) has been named Director of Clinical Medicine at Jensen-Salsbery Laboratories, Inc., Kansas City, Mo., subsidiary of Richardson-Merrell, Inc. (formerly Vick Chemical Co.).

For the past nine years, he has been with the American Cyanamid Co. of New York as clinical veterinarian. Prior to that, he was associated with the Schering Corporation's clinical development department.

Heartworms in the Brain of a Dog

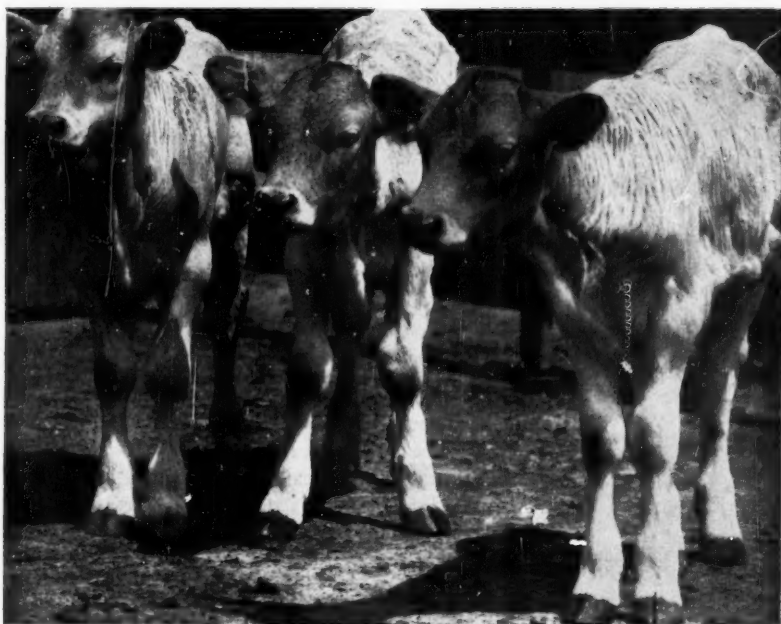
Adult *Dirofilaria immitis* were found in the brain of a dog suspected of having rabies. Such deviations are rare, although these worms have been detected in the hepatic vein. This dog had clinical signs of canine filariasis, such as slight posterior paralysis, a few days prior to death and epilepsy-like signs on the day of death.

On necropsy, 40 *D. immitis* were found in the right atrium of the heart. In the brain, there was a small hemorrhagic area where *D. immitis* had entered the lateral ventricles. There was a larger hemorrhagic area near the site of the invasion.

Microscopic examination showed destruction, softening, and considerable hemorrhage. Glial-cell proliferation and perivascular cell infiltration were found around the destroyed tissues. Eosinophilic infiltration was not observed.—*J. Japan V.M.A.*, 12, (1959): 432.



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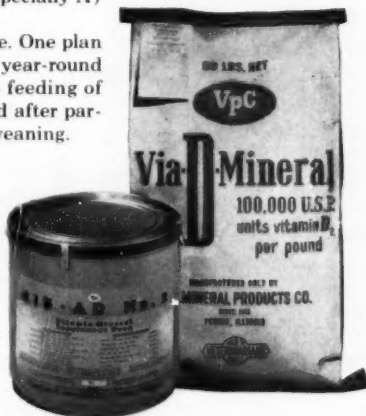
NOW-YOUR CLIENTS CAN SAVE MORE CALVES

Calf losses on many farms total up to 20%. Records show that the highest incidence is in those herds that are heavily fed on concentrates, milked up to their maximum yield, and where the feeding of sufficient minerals and vitamins (especially A) has been neglected.

It is claimed much calf mortality is preventable. One plan endorsed by many prominent veterinarians is the year-round feeding of a Vitamineral Supplement—plus the feeding of VpC RIBAD II to the dam for 60 days before and after parturition and to the calf the first few weeks after weaning.

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Kymar exerts a powerful systemic anti-inflammatory action to promote faster healing. Absorption of edema and blood extravasates is accelerated with relief of pain and restoration of impaired local circulation. Indicated wherever inflammatory tissue reactions retard healing as in: lacerations; contusions, fractures; surgical trauma such as mammary tumor excision, open reduction of fractures, abdominal surgery; cellulitis; abscesses; inflammatory eye conditions. Supplied in vials of 5 cc., oil or aqueous.

KYMAR® OINTMENT

Cleans the wound, clears infection, controls inflammation

Combines debriding, anti-inflammatory, and bacteriostatic effects. The contained proteolytic enzymes cleanse the area of necrotic tissue or crust; anti-inflammatory steroid action controls local edema, hyperemia and pruritus; while local infection is controlled by direct antibiotic action. Kymar Ointment promotes more rapid healing of infected surgical sites, cuts and abrasions, abscesses, fistulous tracts, open joint capsules, burns, primary pyogenic dermatitis (hot spot), skin necrosis (cast sores), mammary gland abscesses. It also minimizes exuberant granulation tissue (proud flesh) in wounds of accidental or surgical origin, and of scar tissue in areas of cosmetic importance. Each gram contains: hydrocortisone diethylaminoacetate hydrochloride 1.25 mg., neomycin palmitate (as base) 3.5 mg., proteolytic activity* 10,000 Armour Units; in a water miscible base.

**as provided by a concentrate of pancreatic proteases*

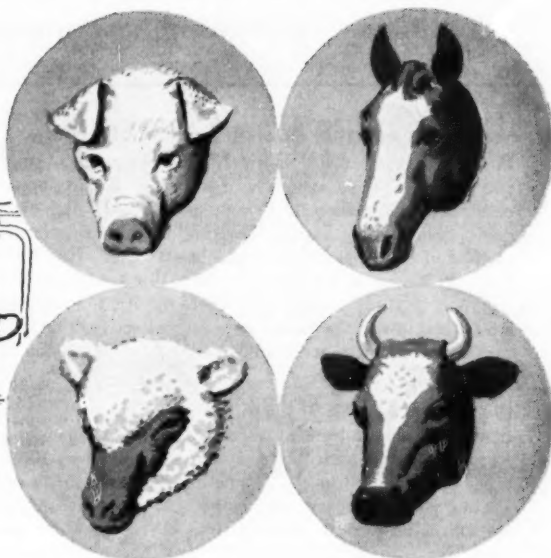
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P.O.P. causes powerful rhythmic contractions of uterine muscle and thus accelerates parturition, eases slow delivery due to uterine inertia, and assists postpartum evacuation of placenta. P.O.P. also exerts a profound contracting effect on smooth muscle elements of the mammary gland to stimulate let-down of milk. In the management of mastitis, it clears inflamed milk ducts to assist udder evacuation.

P.O.P. is Armour's sterile aqueous solution of highly purified oxytomic principle of the posterior pituitary gland, offering 20 U.S.P. units of oxytocin per cc. (twice the potency of U.S.P. standards). Unlike standard posterior pituitary preparations, which are mixtures of oxytomic and vasopressor principles, P.O.P. is an uncomplicated fraction containing less than 0.4 units of pressor activity per cc.

vials of 10 cc. and 30 cc. (20 U.S.P. units per cc.) • SOLD ONLY TO LICENSED VETERINARIANS

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WATER MIX VETERINARY
convenient • palatable • economical**

in necrotic enteritis (*S. choleraesuis*) of swine

FURACIN WATER MIX affords a swift, effective means of suppressing and preventing those serious herd outbreaks of infectious necrotic enteritis of swine. Since scouring pigs "off feed" often continue to drink, "Medication through the drinking water appears to be the method of choice when large numbers of pigs are involved. . . . FURACIN WATER MIX is well adapted to this kind of medication."¹ In this same study, results of bacterial sensitivity testing revealed, "... FURACIN was the most consistently effective drug against the various strains of *E. coli*, and against *S. choleraesuis* (necrotic enteritis)."¹



in gray droppings of mink

Symptomatic improvement usually occurred within one week with FURACIN WATER MIX. "After 5 weeks' medication, 100% of the mink had normal feces."² "At pelting time, the medicated mink showed good flesh, large size, and bore a good quality pelt, while the untreated controls, showed signs characteristic of gray diarrhea: dehydration, lack of body fat, small body size, and poor fur quality."³



in cecal coccidiosis of poultry

"a valuable agent in preventing or reducing mortality . . ."⁴ due to *Eimeria tenella*

in intestinal coccidiosis of poultry

"... FURACIN was effective in preventing mortality due to initial infections with *E. necatrix*. . ."⁵



SUPPLIED: Carton of 330 Gm. and the new carton of 25 pounds.
Available from your professional veterinary distributor.

REFERENCES: 1. Roe, C. K.: Enteric Infections in Weaned Pigs. Paper presented at the Second Regional Conference on the Nitrofurans in Veterinary Medicine, Madison, Wisconsin, May 28, 1959, p. 10. 2. Hughes, D. L., and McMinn, Jr., C. S.: Furacin—A Control for Gray Droppings. *Am. Fur Breeder* 32:24 (Aug.) 1959. 3. Palarski, J. D.: Furacin Treatment of Gray Diarrhea in Mink. *J. Am. Vet. M. Ass.* 136:177 (Feb. 15) 1960. 4. Johnson, C. A.: Studies on the Efficacy of Soluble Furacin Against Cecal Coccidiosis. Abstracts of papers presented at the 45th Annual Meeting of the Poultry Science Association, Raleigh, N. C., Aug. 7-10, 1956, p. 21. 5. Shumard, R. F.: The Activity of Soluble Furacin Against the Coccidian, *Eimeria necatrix*. Paper presented at the First National Symposium on Nitrofurans in Agriculture, Michigan State University, East Lansing, Michigan, Sept. 28-29, 1956.

NITROFURANS—a unique class of antimicrobials—
neither antibiotics nor sulfonamides

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Coming Meetings

Notices of coming meetings must be received 30 days before date of publication.

Indiana Veterinary Medical Association. 77th annual convention. Hotel Severin, Indianapolis, Ind., Jan. 11-13, 1961. Dr. L. M. Borst, 3315 Shelby St., Indianapolis, Ind., secretary.

New York State Veterinary College. Fifty-third annual conference for veterinarians. Cornell University, Ithaca, N.Y., Jan. 4-6, 1961. Dr. George C. Poppensiek, New York State Veterinary College, Cornell University, Ithaca, N.Y., dean.

American Veterinary Radiology Society. Mid-year meeting. Hotel Severin, Indianapolis, Ind., Jan. 10, 1961. Dr. J. J. Fishler, 3421 S. Main St., Elkhart, Ind., secretary.

Intermountain Veterinary Medical Association. Thirty-third annual meeting. Newhouse Hotel, Salt Lake City, Utah, Jan. 11-14, 1961. Mr. Peter B. Woolley, 306 Ness Building, 28 West Second South, Salt Lake City, Utah, manager.

Kansas Veterinary Medical Association. Fifty-seventh annual convention. Broadview Hotel, Wichita, Jan. 15-17, 1961. Dr. M. W. Osburn, Kansas State University, Division of Extension, Manhattan, Kan., secretary-treasurer.

Wisconsin Veterinary Medical Association. Forty-fifth annual meeting. Schroeder Hotel, Milwaukee, Wis., Jan. 15-17, 1961. W. J. O'Rourke, 540 W. Washington Ave., Madison 3, Wis., secretary.

Pennsylvania, University of. Sixty-first annual conference of veterinarians. University of Pennsylvania School of Veterinary Medicine, Jan. 17-18, 1961. Dr. Donald Patterson, School of Veterinary Medicine, University of Pennsylvania, program chairman.

Nevada State Veterinary Association. Annual meeting. Stardust Hotel, Las Vegas, Nev., Jan. 22-24, 1961. Dr. Murray H. Phillipson, 1720 S. Main St., Las Vegas, Nev., secretary.

Oklahoma Veterinary Medical Association. Annual meeting. Oklahoma State University, Student Union Bldg., Stillwater, Okla., Jan. 22-24, 1961. Dr. W. D. Speer, 538 S. Madison, Tulsa, Okla., secretary.

Tennessee Veterinary Medical Association. Annual meeting. Noel Hotel, Nashville, Tenn., Jan. 22-24, 1961. Dr. H. W. Hayes, 5009 Clinton Pike, Knoxville, Tenn., secretary.

Arkansas Veterinary Medical Association. Annual meeting. Hotel Marion, Little Rock, Jan. 22-24, 1961. Thayer D. Hendrickson, 7824 Cantrell Rd., Little Rock, Ark., secretary-treasurer.

Minnesota Veterinary Medical Association. Annual meeting. Lexington Hotel, Minneapolis, Minn., Jan. 23-25, 1961. B. S. Pomeroy, 1443 Raymond Ave., St. Paul 8, Minn., secretary.

Louisiana State University. Short Course for veterinarians. Pleasant Hall, Louisiana State University campus, Baton Rouge, Jan. 24-25, 1961. Dr. R. B. Lank, Department of Veterinary Science, Louisiana State University, chairman.

North Carolina Veterinary Medical Association. Twenty-third annual meeting. North Carolina State College, Raleigh, N.C., Jan. 25-26, 1961. Dr. Edward G. Batte, Veterinary Section, North Carolina State College, School of Agriculture, Raleigh, N.C., head.

Ontario Veterinary Association. Eighty-seventh annual meeting. Royal York Hotel, Toronto, Ont., Jan. 26-28, 1961. Dr. R. J. Humble, Ontario Veterinary College, Guelph, Ont., chairman.

Texas Veterinary Medical Association. Annual convention. Rice Hotel, Houston, Jan. 29-31, 1961. Dr. King Gibson, 3906 Lemmon Ave., Dallas, Texas, co-chairman.

California Veterinary Medical Association. Annual mid-winter conference. School of Veterinary Medicine, University of California, Davis, Calif., Jan. 30-Feb. 1, 1961. Mr. Kenneth Humphreys, 3004 16th St., San Francisco, Calif., executive secretary.

Ohio State Veterinary Medical Association. Annual meeting. Commodore Perry Hotel, Toledo, Ohio, Feb. 5-8, 1961. Dr. R. E. Rebrassier, 1411 West Third Ave., Columbus 12, Ohio, executive secretary.

Sierra Veterinary Medical Association. Second annual meeting. Mammoth Mountain Inn, Mammoth Lakes, Calif., Feb. 12-17, 1961. Dr. John R. Puckett, 13476 Washington Blvd., Venice, Calif., president.

Missouri Veterinary Medical Association. Sixty-ninth annual meeting. Hotel Statler-Hilton, St. Louis, Feb. 19-21, 1961. Paul L. Spencer, D.V.M., P.O. Box 283, Jefferson City, Mo., secretary.

Illinois State Veterinary Medical Association. Annual meeting. LaSalle Hotel, Chicago, Ill., Feb. 20-22, 1961. Dr. C. B. Hostetler, 1383 Whitcomb Avenue, Des Plaines, Illinois, executive secretary.

Manitoba Veterinary Medical Association. Winnipeg, Manitoba, Feb. 27-28, 1961. Dr. K. Warren, Killomey, Manitoba, secretary.

Alabama Veterinary Medical Association. Annual meeting. Whitley Hotel, Montgomery, Ala., March 19-21, 1961. Dr. M. K. Heath, School of Veterinary Medicine, Auburn, Ala., secretary.

American Veterinary Medical Association. Ninety-eighth annual meeting. Sheraton-Cadillac Hotel, Detroit, Mich., Aug. 21-24, 1961. Dr. H. E. Kingman, Jr., 600 S. Michigan Ave., Chicago 5, Ill., executive secretary.

(Continued on ad. p. 50)

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Foreign Meetings

Fourth International Congress on Animal Reproduction. The Hague, Netherlands, June 5-9, 1961. For additional information contact: the Secretariat of the Fourth International Congress on Animal Reproduction, 14, Burge-meester de Monchyplein, The Hague, Netherlands, Dr. L. Hoedemaker, secretary to the organizing committee.

Eighth International Congress of Animal Husbandry. Hamburg, Germany, June 13, 1961.

Twelfth World's Poultry Congress. Show Grounds of the New South Wales Royal Agricultural Society, Sydney, Australia, Aug. 13-18, 1962. Dr. Cliff D. Carpenter, chairman, U. S. Participation Committee, 1207 Emerald Bay, Laguna Beach, Calif.; Dr. A. William Jasper, secretary, c/o AFBF, 2300 Merchandise Mart, Chicago 54, Ill.

Regularly Scheduled Meetings

ALABAMA—Jefferson County Veterinary Medical Association, the second Thursday of each month. Dr. Marcus F. Martin, 1704 Centerpoint Rd., Birmingham, Ala., secretary.

Mobile-Baldwin Veterinary Medical Association, the third Tuesday of each month, Sea Ranch Restaurant, Dr. Cecil S. Yarbrough, 4121 Government Blvd., Mobile, Ala., secretary.

Southeast Alabama Veterinary Medical Association, the second Sunday afternoon of January, April, July, and October, Rawls Hotel, Enterprise, Ala. Dr. J. B. Taylor, P.O. Box 96, Elba, Ala., secretary.

ARIZONA—Central Arizona Veterinary Medical Association, the second Tuesday of each month, 8:00 p.m. Dr. Bertram O. Woodworth, 582 N. Arizona Ave., Chandler, Ariz., secretary.

CALIFORNIA—Alameda-Contra Costa Veterinary Medical Association, the last Wednesday of each month. Dr. L. M. Proctor, 24 Meadow Lane, Concord, Calif., secretary.

Bay Counties Veterinary Medical Association, the second Tuesday of February, April, July, September, and December. Mr. Herb Warren, 3004 Sixteenth St., San Francisco, Calif., executive secretary.

Humboldt-Del Norte Counties Veterinary Medical Association, the second Tuesday of January, May, September, and November, Eureka, Calif. Dr. M. Lunstra, P.O. Box 734, Eureka, Calif., secretary.

Mid-Coast Veterinary Medical Association, the first Thursday of each month, San Luis Obispo, Calif. Dr. William Matulich, P.O. Box 121, San Luis Obispo, Calif., secretary.

Northern San Joaquin Veterinary Medical Association, the fourth Wednesday of each month, Hotel Covell, Modesto, Calif. Dr. Wilson Kelly, Rt. 3, Box 234, Lodi, Calif., secretary.

Orange County Veterinary Medical Association, the first Thursday of each month. Dr. W. J. Kinnaman, 1414 N. Harbor, Santa Ana, Calif., secretary.

Peninsula Veterinary Medical Association, the third Tuesday of each month. Dr. Arthur L. Gilger, 2905 S. El Camino Real, San Mateo, Calif., secretary.

San Diego County Veterinary Medical Association, the fourth Tuesday of each month, 7:30 p.m., Kings Inn, San Diego, Calif. Dr. Fred Sherman, 3954 Willowside Lane, Spring Valley, Calif., secretary.

Santa Clara Valley Veterinary Association, the last Tuesday of each month, San Jose, Calif. Dr. Keith Smith, 413 Willow, San Jose, Calif., secretary.

South California Veterinary Medical Association, the last Wednesday of each month, Hotel Mayfair, Los Angeles, Calif. Dr. H. Don Mahan, 1919 Wilshire Blvd., Los Angeles 57, Calif., executive secretary.

COLORADO—Central Colorado Veterinary Medical Association, meetings vary. Dr. W. D. Carroll, 410 W. Fourth St., Pueblo, Colo., secretary.

Denver Area Veterinary Medical Society, Inc., the fourth Tuesday of each month. Dr. Larry G. Ramsay, 2750 South Broadway, Englewood, Colo., secretary.

Northeastern Colorado Veterinary Medical Association, the first Friday of each month, Sterling, Colo. Dr. Don Ostwald, Fort Morgan, Colo., secretary.

Northern Colorado Veterinary Medical Society, the first Wednesday of each month, Fort Collins, Colo. Dr. Charles H. Buchan, Lazy A. Ranch, Livermore, Colo., secretary.

Weld County Veterinary Medical Society, the second Wednesday of each month, Camfield Hotel, Greeley, Colo. Dr. D. R. Mackey, P.O. Box 1520, Greeley, Colo., secretary.

DELAWARE—Kent-Sussex Veterinary Medical Association, the last Thursday of September, February, May, and July, Alexander's Restaurant. Dr. Thomas A. Jeter, Jr., R.D. 4, Dover, Del., secretary.

New Castle County Veterinary Medical Association, the second Tuesday of each month, Powder Mill Inn, Route 52, Greenville, Del. Dr. Arthur Paul Mayer, R.D. 2, Elkton Rd., Newark, Del., secretary.

FLORIDA—Hillsborough County Veterinary Medical Association, the second Monday of each month. Dr. H. Palmer Brooks, 7917 N. Armenia, Tampa, Fla., secretary.

Jacksonville Veterinary Medical Association, the first Thursday of each month, 8 p.m., Green Turtle Restaurant, Phillips Highway. Dr. Edwin G. Clampett, 5150 Love Grove Rd., Jacksonville 7, Fla., secretary.

Palm Beach Veterinary Society, the last Thursday of each month, 8 p.m., McArthur Dairy Bldg., 4 Points, West Palm Beach, Fla. Dr. Jack Liggett, 4501 Broadway, West Palm Beach, Fla., secretary.

Pinellas County Veterinary Society, the first Monday of each month except March, June, September, and December, Fort Harrison Hotel, Clearwater, Fla. Dr. Leon H. Sellers, Jr., 3813 Tyrone Blvd., St. Petersburg, Fla., secretary.

Ridge Veterinary Association, the fourth Thursday of each month, John's Restaurant, Barrow, Fla. Dr. John C. Haromy, Rt. 1, Box 293, Lake Wales, Fla., secretary.

South Florida Veterinary Society, the third Wednesday of each month, Nick & Arthurs Restaurant, Miami, Fla. Dr. G. E. Lanier, 20852 S. Federal Highway, Miami, Fla., secretary.

GEORGIA—East Georgia Veterinary Medical Association, the first Sunday in February, May, August, and November, 1 p.m. Dr. Hugh F. J. Arundel, P.O. Box 153, Statesboro, Ga., secretary.

Greater Atlanta Veterinary Medical Society, Inc., the third Thursday of each month, Elks Home on Peachtree St. Dr. Richard C. Montgomery, 213 Connally Dr., East Point, Ga., secretary.

South Georgia Veterinary Medical Association, the first Sunday of January, April, July, and October. Dr. W. F. Schroeder, Georgia Coastal Plain Experiment Station, Animal Disease Department, Tifton, Ga., secretary.

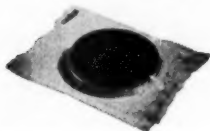
(Continued on adv. p. 52)

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Once you use this unique diagnostic aid you will always want a good supply in your refrigerator and several in your bag when you go out on calls. Plates remain usable for months under normal refrigeration.

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Meetings—continued from adv. p. 50.

ILLINOIS—Chicago Veterinary Medical Association, the second Tuesday of each month, 9 p.m., LaSalle Hotel, Chicago, Ill. Dr. Charles H. Armstrong, 3411 Dempster, Skokie, Ill., secretary.

Eastern Illinois Veterinary Medical Association, the first Thursday of March, June, September, and December, Hotel Tilden Hall, Champaign, Ill. Dr. Ray D. Hatch, Dept. of Veterinary Clinical Medicine, University of Illinois, Urbana, Ill., secretary.

INDIANA—Calumet Area Veterinary Medical Association, the first Thursday of each month except July, August, December, and January, Wellman's Corral, Valparaiso, Ind. Dr. Bruce H. Sharp, Box 166, Hobart, Ind., secretary.

Central Indiana Veterinary Medical Association, the second Wednesday of each month, Continental Hotel, Indianapolis, Ind. Dr. L. B. Horrall, 5901 Crawfordville Rd., Indianapolis 24, Ind., secretary.

Michiana Veterinary Medical Association, the second Thursday of each month except July and December, LaSalle Hotel, South Bend, Ind. Dr. R. E. Schaub, New Carlisle, Ind., secretary.

Wabash Valley Veterinary Medical Association, the third Wednesday of each month except January, August, and December, Honeywell Memorial Building, Wabash, Ind. Dr. Carlton Stanforth, 2703 S. Park Rd., Kokomo, Ind., secretary.

IOWA—Central Iowa Veterinary Medical Association, the third Monday of each month, 6:45 p.m., Breeze House, Dr. H. L. Arand, Indianola, Iowa, president.

Eastern Iowa Veterinary Association, Inc., annual meeting, October, 1961, Cedar Rapids, Iowa. Dr. C. S. Thayer, Medical College, State University of Iowa, Iowa City, Iowa, secretary.

North Central Iowa Veterinary Medical Association, April 20, 1961, Warden Hotel, Fort Dodge, Iowa. Dr. H. Engelbrecht, 317 Tenth Ave., N., Fort Dodge, Iowa, secretary.

Southwest Iowa Veterinary Medical Association, the first Tuesday in April and October, Hotel Chiefton, Council Bluffs, Iowa. Dr. Floyd Sharp, Red Oak, Iowa, secretary.

Upper Iowa Veterinary Association, the third Tuesday of each month September through May. Dr. Norman Held, Ventura, Iowa, secretary.

KANSAS—Sedgwick County Veterinary Medical Association, the third Thursday in February, May, and September plus months when special programs are planned. Dr. Ernest Boley, P.O. Box 1540, Wichita 1, Kan., secretary.

KENTUCKY—Jefferson County Veterinary Society, the first Wednesday of each month except July and December. Dr. G. R. Comfort, 2102 Reynolds Lane, Louisville 18, Ky., secretary.

LOUISIANA—Calcasieu Parish Veterinary Medical Association, the first Tuesday of every second month, 8 p.m., Chateau-Charles, Lake Charles, La. Dr. Joseph E. Bruce, P.O. Box 506, Sulphur, La., secretary.

New Orleans Veterinary Medical Association, the third Thursday of each month, Iberville Room, Mouteleone Hotel, Dr. Roy Hock, 938 Esplanade Ave., New Orleans, La., secretary.

Southwest Louisiana Veterinary Medical Association, semiannual meetings. Dr. L. H. Pease, 304 Ella St., Lafayette, La., secretary.

MASSACHUSETTS—Boston Veterinary Association, the third Wednesday in February, April, May, November, and December, Angell Memorial Animal Hospital. Dr. Harrison B. Siegle, 290 Bridge St., Dedham, Mass., secretary.

MICHIGAN—Midstate Veterinary Association, the second Thursday of each month September through May. Dr. D. B. Coohon, 304 Milford St., East Lansing, Mich., secretary.

Southern Michigan Veterinary Association, the second Wednesday of each month, Rock Inn, Adrian, Mich. Dr. Charles W. DeLand, Box 25, Ida, Mich., secretary.

Thumb Veterinary Medical Association, the second Thursday of every other month beginning with February. Dr. R. C. Hervey, Cass City, Mich., secretary.

Washtenaw County Veterinary Medical Association, Allen-L Hotel, Ann Arbor, Mich. Dr. P. E. Sharrard, 315 Garfield, Chelsea, Mich., secretary.

MINNESOTA—Central Minnesota Veterinary Association, time and place varies. Dr. P. E. Poss, Paynesville, Minn., secretary.

Twin City Veterinary Medical Association, the third Thursday of February, April, June, September, and November, Room 125 Veterinary Clinic, University of Minnesota, St. Paul, Minn. Dr. I. M. G. Gourley, Veterinary Clinic, College of Veterinary Medicine, University of Minnesota, St. Paul, Minn., secretary.

MISSISSIPPI—Northeast Mississippi Veterinary Medical Association, meetings vary. Dr. Harvey F. McCrory, P.O. Box 536, State College, Miss., secretary.

Southeastern Minnesota Veterinary Medical Society, the second Thursday of each month, Kahler Hotel, Rochester, Minn. Dr. Paul E. Zollman, 200 S.W. First St., Rochester, Minn., secretary.

MISSOURI—Greater St. Louis Veterinary Medical Association, the first Friday of each month except July and August. Coronado Hotel, Lindell Blvd. and Spring St. Dr. H. C. Eschenroeder, 8088 Watson Rd., St. Louis 19, Mo., secretary.

North East Missouri Veterinary Medical Association, four meetings annually. Dr. L. L. Rice, Shelbina, Mo., secretary.

Southeast Missouri Veterinary Medical Association, the third Wednesday of April and September, all day. Dr. John R. Adams, 405 North St., Sikeston, Mo., secretary.

NEW HAMPSHIRE—New Hampshire Veterinary Medical Association, the fourth Wednesday of January, April, July, and October, Highway Hotel, Concord, N.H. Dr. Fred E. Allen, Nesmith Hall, Durham, N.H., secretary.

NEW JERSEY—Central New Jersey Veterinary Medical Association, the second Thursday of November, January, March, and May, Old Hights Inn, Hightstown, N.J. Dr. John W. Flemer, P.O. Box 191, Princeton, N.J., secretary.

Metropolitan New Jersey Veterinary Medical Association, the third Wednesday of each month, October through April, except December, the Coronet, Irvington, N.J. Dr. L. C. Schimoler, Box 432, Summit, N.J., secretary.

NEW MEXICO—Bernalillo County Veterinary Practitioners Association, the fourth Tuesday of each month, 12:30 p.m., Fex Club, Albuquerque, N.M. Dr. D. W. Fitzgerald, 1825 Lomas Blvd., N.E., Albuquerque, N.M., secretary.

NEW YORK—Catskill Mountain Veterinary Medical Association, the second Tuesday of February, May, August, and November. Dr. A. E. Davis, R.D. 2, Delhi, N.Y., secretary.

Finger Lakes Veterinary Medical Society, the third Wednesday of each month, Colonial Inn, Canandaigua, N.Y. Dr. Joseph Ferris, Holcomb, N.Y., secretary.

Long Island Veterinary Medical Association, Inc., the third Thursday of the month, September through May. Dr. J. Asmus Sutorius, 11 Fairway, W., Sayville, N.Y., secretary.

Hudson Valley Veterinary Medical Society, the second Wednesday of February, May, August, and November. Dr. W. S. Stone, 18 Highland Dr., East Greenbush, N.Y., secretary.

Monroe County Veterinary Medical Association, the first Thursday of even-numbered months except August, Monroe County Health Department. Dr. Irwin Bircher, 40 Meredith St., Rochester 9, N.Y., secretary.

(Continued on adv. p. 54)

IN BOVINE MASTITIS

CONSISTENT THERAPEUTIC PERFORMANCE

FURACIN® VETERINARY

BRAND OF NITROFURAZONE

A unique, broad-spectrum antibacterial, FURACIN displays decisive effectiveness against mastitis-inducing organisms often resistant to other therapeutic agents. These include such causative pathogens as *Staph. aureus*, *Str. agalactiae*, *Str. dysgalactiae*, *Str. uberis*, *E. coli* and *Ps. aeruginosa*, sensitive to FURACIN.^{1,2}

Given early in acute cases, FURACIN acts to prevent severe, irreversible udder damage of chronic mastitis that usually results in fibrosis and permanent loss of the cow's milk-producing potential. Thus, by reversing clinical signs of acute infection and arresting the process of induration, FURACIN helps maintain the integrity of the duct system and re-establish normal milk production levels.

A large animal practitioner who has made FURACIN his primary antimastitis agent, summarizes its principal advantages:

- it is a professional product
- there appears to be no development of bacterial resistance
- it is milk-miscible, thus, seems to be totally distributed throughout the injected quarter
- it does not interfere with healing
- is compatible with other agents³

FURACIN SOLUTION VETERINARY SQUEEJET®

Improved intramammary dosage form of FURACIN in a convenient, low-cost single-dose, ready-to-use dispenser.



Contains FURACIN, 0.2%, in a water-miscible base.
Available in SQUEEJETS of 30 cc., boxes of 12.

Note: Milk from cows treated with FURACIN Solution Veterinary should be discarded or used for purposes other than human consumption for at least 24 hours after the last treatment.

FURACIN-PENICILLIN GEL VETERINARY



The broad-spectrum activity of FURACIN is combined with the specific antistreptococcal action of penicillin for additive antibacterial effect.

Contains FURACIN, 2%, and procaine penicillin G (13,333 units per cc.) in peanut oil with aluminum stearate, 3%. In rubber-capped vial of 100 cc., applicator tube of 7.5 cc., boxes of 12.

Note: Milk from cows treated with FURACIN-penicillin Gel should be discarded or used for purposes other than human consumption for at least 72 hours after the last treatment.



References: 1. Kakavas, J. C.; Roberts, H. D. B.; deCourcy, S. J., and Ewing, D. L.: *J. Am. Vet. M. Ass.* 119:203 (Sept.) 1951. 2. Kakavas, J. C.: *Antibiotics Annual 1954-1955*, New York, Medical Encyclopedia, Inc., 1955, p. 323. 3. Jackson, R. A.: A Program for Mastitis Control. Read at the Second Regional Conference on the Nitrofurans in Veterinary Medicine, Madison, Wisconsin, May 28, 1959, pp. 23-26.

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Meetings—continued from adv. p. 52.

Southern Tier Veterinary Medical Association, the fourth Thursday of January, April, July, and October. Dr. G. E. Morse, New York State Veterinary College, Ithaca, N.Y., secretary.

Veterinary Medical Association of New York City, Inc., the first Wednesday of each month, October to June, 8 p.m., New York University Medical Center, 550 First Ave., New York, N.Y. Dr. C. E. DeCamp, 24 Warwick Ave., Scarsdale, N.Y., secretary.

Western New York Veterinary Medical Association, Dec. 15, 1960, Sheraton Hotel, Buffalo, N.Y. Dr. F. E. McClelland, Jr., 455 Ellicott St., Buffalo 3, N.Y., secretary.

NORTH CAROLINA—Eastern North Carolina Veterinary Medical Association, the last Tuesday of each month. Dr. Byron H. Brow, Box 453, Goldsboro, N.C., secretary.

Piedmont Veterinary Medical Association, the last Wednesday of each month, Moose Club, Hickory, N.C. Dr. James F. Hughey, 1645 Wilkinson Blvd., Gastonia, N.C., secretary.

Western North Carolina Veterinary Medical Association, the third Thursday of each month, The Manor, Asheville, N.C. Dr. Robert LaDue, Asheville, N.C., secretary.

OHIO—Dayton Veterinary Medical Association, the first Tuesday of each month, 8-45 p.m., Fidelity Pharmacy Building, Dr. E. Stewart Hughes, 2838 Linden Ave., Dayton 10, Ohio, secretary.

Gaucha County Veterinary Society, the second Wednesday of each month, at noon, Manor House, Newbury, Ohio. Dr. Peter Clemens, RFD 2, Chagrin Falls, Ohio, secretary.

Kilbuck Valley Veterinary Medical Association, the first Wednesday of every other month, Dr. Charles Gale, Ohio Agricultural Experiment Station, Wooster, Ohio, secretary.

Kokosine Valley Veterinary Association, the second Wednesday of each month, Dr. Edward L. Bowls, 64 W. Sandusky St., Fredericktown, Ohio, secretary.

Madison County Veterinary Association, meetings irregular. Dr. James E. Herman, London Animal Hospital, London, Ohio, president.

Mahoning County Veterinary Medical Association, the fourth Tuesday of each month, Youngstown Maennerchor, Dr. R. J. Edwards, 234 Fifth Ave., Youngstown, Ohio, secretary.

Stark County Veterinary Medical Association, the third Tuesday of each month, 8:30 p.m. Dr. W. B. Grigor, Hartsville, Ohio, secretary.

Tri-County Veterinary Medical Association, the fourth Wednesday of January, May, and September. Dr. Fred Guenther, Springboro, Ohio, president.

West Central Veterinary Medical Association, the third Thursday of February, June, September, and November, Alpine Village, Lima, Ohio. Dr. K. R. Heidt, 1055 Spencerville Rd., Lima, Ohio, secretary.

Wheeling Valley Veterinary Medical Society, meetings quarterly. Dr. Paul Romig, R.D. 1, Pleasant Grove, Adena, Ohio, president.

OKLAHOMA—Tulsa Association of Small Animal Veterinarians, the first Monday of each month, Tulsa City-County Health Bldg., Tulsa, Okla. Dr. Glen A. Harbert, 2242 E. 56 Pl., Tulsa, Okla., secretary.

Tulsa Veterinary Medical Association, the third Thursday of each month, City-County Public Health Building, 4616 E. 15th St., Tulsa, Okla. Dr. Robert H. Leonard, 410 North 31st St., Muskogee, Okla., secretary.

OREGON—Portland Veterinary Medical Association, the second Tuesday of each month except June, July, and August, Ireland's at Lloyd's Restaurant, 718 N.E. 12th Ave., Portland, Ore. Dr. Morris B. Frick, 8415 S.E. McLoughlin Blvd., Portland 2, Ore., secretary.

Willamette Veterinary Medical Association, the third Tuesday of each month, Salem, Ore. Dr. E. L. Henkel, 803 Oak St., P.O. Box 155, Silverton, Ore., secretary.

PENNSYLVANIA—Capital City Veterinary Medical Association, the second Tuesday of odd-numbered months, Colonial Country Club, Dr. Charles R. Fager, 3806 Market St., Camp Hill, Pa., secretary.

Conestoga Veterinary Medical Association, the third Friday of each month, September through May, 8:30 p.m., Exchange Room, Union Stock Yards, Lancaster, Pa. Dr. I. M. Saturen, R.D. 2, Willow St., Pa., secretary.

Keystone Veterinary Medical Association, the fourth Wednesday of each month, University of Pennsylvania, School of Veterinary Medicine, Dr. Jacob L. Kolodner, 7921 Rodgers Rd., Elkins Park, Pa., secretary.

Northwestern Pennsylvania Veterinary Medical Association, the second Wednesday of January, April, July, and October, Dr. Arthur Richards, Jr., Box 528, Grove City, Pa., secretary.

Penn-Allegheny Veterinary Club, the third Thursday of odd numbered months, Wissinger's Inn, Ebensburg, Pa. Dr. S. B. Guss, Veterinary Science Bldg., University Park, Pa., secretary.

TENNESSEE—East Tennessee Veterinary Medical Association, the second Saturday of December, May, 1956, and September, Knoxville, Tenn. Dr. Weldon W. Williams, 1016 West Cumberland, Knoxville, Tenn., secretary.

West Tennessee Veterinary Medical Association, the second Saturday night in March, September and December, New Southern Hotel, Jackson, Tenn. Dr. Cameron Shawl, Collierville, Tenn., secretary.

TEXAS—Dallas County Veterinary Medical Association, the second Tuesday of each month, Dr. Eldon O'Harrison, 753 Floyd Rd., Richardson, Texas, secretary.

Harris County Veterinary Medical Association, the first Thursday of each month, 8 p.m., Baylor Medical School, Dr. W. L. Kleb, 93 Tidwell Rd., Houston 22, Texas, secretary.

Rio Grande Valley Veterinary Association, the second Thursday of each month, 8 p.m. Dr. L. F. Cox, P.O. Box 131, Weslaco, Texas, secretary.

Tarrant County Veterinary Medical Association, the third Thursday of each month, 7:30 p.m., Cattleman's Steak House, Ft. Worth, Texas. Dr. James P. Jones, Box 335, Hurst, Texas, secretary.

UTAH—Intermountain Veterinary Medical Association, Jan. 12-14, 1961, Newhouse Hotel, Salt Lake City, Utah. Dr. Royal A. Bagley, 4600 Creek View Dr., Murray 7, Utah, secretary.

VERMONT—Vermont Veterinary Medical Association, June and December, Dr. A. E. Janawicz, Vermont Department of Agriculture, Montpelier, Vt., secretary.

VIRGINIA—Central Virginia Veterinary Association, meetings monthly, Dr. Abraham Linder, P.O. Box 8526, Richmond, Va., secretary.

Northern Virginia Veterinary Conference, the second Wednesday of each month, Lee-Jackson Restaurant,



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Winchester, Va. Dr. T. P. Kaudelka, P.O. Box 694, Harrisonburg, Va., secretary.

Northern Virginia Veterinary Society, meetings called by the president four times a year, Dr. Justin J. Parvey, P.O. Box 476, Fairfax, Va., secretary.

Southwest Virginia Veterinary Medical Association, the first Thursday of each month, Veterinary Science Laboratory, Virginia Polytechnic Institute, Blacksburg, Va. Dr. D. F. Watson, Department of Veterinary Science, Virginia Polytechnic Institute, Blacksburg, Va., secretary.

WASHINGTON—Inland Empire Veterinary Medical Association, the third Thursday of each month, Dr. William F. Daut, Jr., W. 3826 Decatur, Spokane, Wash., secretary.

Seattle Veterinary Medical Association, the third Monday of each month, 8:00 p.m., Magnolia Legion, 2870 Thirty-Second, West, Seattle, Wash. Dr. Philip F. Irwin, 130 Fifth Ave., N., Seattle 9, Wash., secretary.

WISCONSIN—Coulee Region Veterinary Medical Association, the second Wednesday of odd numbered months, Sparta, Wis. Dr. F. N. Petersen, Box 127, Cashton, Wis., secretary.

Dane County Veterinary Medical Association, the second Thursday of each month, September through May, Dr. Milo L. Johnson, 6 W. State Capitol, Madison, Wis., secretary.

Northeastern Wisconsin Veterinary Medical Association, the third Wednesday of April and September, Dr. William Madson, 218 E. Washington St., Appleton, Wis., secretary.

Rock Valley Veterinary Medical Association, the first Wednesday of each month, Janesville V.F.W. Club, Dr. T. A. Rude, Stoughton, Wis., secretary.

Southeastern Wisconsin Veterinary Association, the third Thursday of each month, Dr. J. Robert Curtis, 419 W. Cook St., Portage, Wis., secretary.

Southwestern Wisconsin Veterinary Medical Association, the first Thursday of even-numbered months, Dr. James D. Leary, Soldiers Grove, Wis., secretary.

Waukesha County Veterinary Medical Association, the second Tuesday of every other month, Dr. John E. Kuenzi, 323 E. North St., Waukesha, Wis., secretary.

Horns Coming Off

Horns in the show ring may become as conspicuous as they once were common. The Purebred Dairy Cattle scorecard no longer discriminates against dehorned cattle. Showmen have become more interested in milking cows for a profit (in 1 herd of 3,000 Jerseys, dehorning meant a \$100-per-day increase in milk production) and taking precautions against cattle injury than in producing attractively horned cattle. As a result, dehorned cattle have won at regional and national shows.—*Hoard's Dairyman*, 104, (1959): 1152.

Malpractice Insurance Fails Physicians


Because of the failure of an English insurance firm, an American surgeon has had to pay \$10,000 out of his savings to settle a malpractice action. Other physicians may face the same problem because of the British Commercial Insurance Company which is now in liquidation.

These physicians were under the impression that they were purchasing 100 per cent coverage by Lloyd's of London, whose stability and resources are unquestioned. These physicians were astonished to learn, however, that, in some cases, British Commercial held 80 per cent of the coverage and Lloyd's held only limited amounts. The suit against the surgeon was pending for 5 years, but he was not informed until shortly before the trial that the defunct British Commercial carried 80 per cent of the coverage.

Although the surgeon is a creditor for \$10,000 against the liquidators of the English firm, financial experts predict it may be years before the complicated international dealings are settled.

An incident such as this dramatizes the need for every professional man holding malpractice insurance to examine the fine print carefully to make certain that he is getting the protection he is paying for. In this case, the insurer was described as "Lloyd's, London, and/or companies" but did not state that the "and/or" companies might be carrying 80 per cent of the insurance.—*AMA News* (Feb. 8, 1960): 1.

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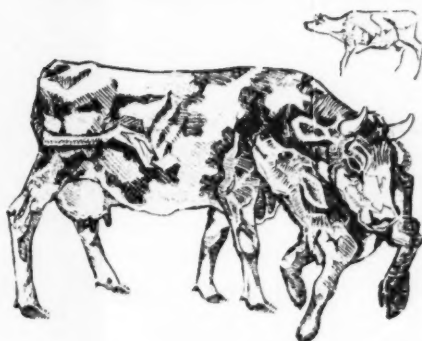
Dr. Donald E. Fogg

company's animal health department at Rahway, N. J. Prior to joining Merck in 1951, he spent four years in private practice, and held positions in the USDA and the Delaware State Board of Agriculture.

Dr. Fogg is a member of the AVMA, New Jersey V.M.A., American Association for the Advancement of Science, World Poultry Science Association, Industrial Veterinary Association, and U. S. Livestock Sanitary Association.

Milking Machine for Sows

A milking machine for sows has been developed which collects milk separately and simultaneously from all functional glands. Its principal use is to measure milk yield and secure adequate samples for composition studies.—*J. Anim. Sci.*, 19, (Aug., 1960): 780.



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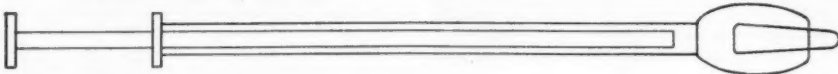
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1. Vigue, R. F., et al.: J. Am. Vet. M. Ass. 134:308 (April 1) 1959.

2. Vigue, R. F.: Personal communication.

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